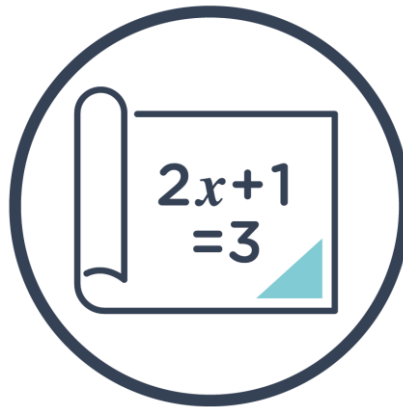


Equations



$$2x+1=3$$



1. Prends ton niveau



2. Plie sur le trait pour cacher les solutions.



3. Ecris les réponses dans un cahier à côté, rien sur la feuille!



4. A la fin du temps accordé, compare tes réponses aux solutions.



5. Corrige tes erreurs et analyse-les.



6. Prêt pour le niveau suivant ? Demande à passer un test.

module I : équations du type $x + b = c$

page

niv.1	avec naturels	$x + 1 = 3$	3
niv.2	avec entiers	$x + 3 = 1$	4
niv.3	avec fractions	$x + \frac{1}{2} = 1$	5

module II : équations du type $ax = b$

niv.1	avec naturels	$3x = 21$	6
niv.2	avec entiers	$-3x = 21$	7
niv.3	avec fractions	$-4x = \frac{2}{3}$	8

module III : équations du type $x + b = c$ ou $ax = b$

niv.1	avec entiers	$x - 4 = -8$ $3x = 9$	9
niv.2	avec fractions	$-2 + x = \frac{1}{5}$ $\frac{5x}{3} = 12$	12

module IV : équations du type $ax + b = c$

niv.1	avec des entiers et sans parenthèses	$8x - 3 = 13$	13
niv.2	avec des entiers et parenthèses	$4(x + 5) = 60$ ou $5(4x + 3) = 75$	14
niv.3	avec des fractions	$\frac{3x}{4} + 5 = 36$	15

module V : équations du type $ax + b = cx + d$

niv.1	avec des entiers et sans parenthèses	$x - 7 = -4x - 2$	16
niv.2	avec des entiers et parenthèses	$-2(x - 3) = -x + 12$	17
niv.3	avec des fractions	$\frac{11x}{5} - 5 = x + 7$	18

module VI : équations complexes et à deux inconnues

niv.1	complexes fractionnaires	$\frac{(4x - 9)}{3} = \frac{(9x + 3)}{4}$	19
niv.2	deux inconnues par substitution simple	$3x = -9$ $-8x + 4y = 0$	20
niv.3	deux inconnues par substitution ou combinaison	$9x - 10y = 62$ $2x + 7y = 23$	23

module I

$$x + b = c$$



niv.1 : Résous les équations avec des naturels.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$x + 17 = 26$	$x + 8 = 14$	$x + 3 = 11$		$x=9$	$x=6$	$x=8$	1
2	$x + 14 = 15$	$x + 14 = 24$	$x + 8 = 12$		$x=1$	$x=10$	$x=4$	2
3	$x + 6 = 17$	$x + 7 = 26$	$x + 13 = 21$		$x=11$	$x=19$	$x=8$	3
4	$x + 1 = 6$	$x + 9 = 18$	$x + 9 = 15$		$x=5$	$x=9$	$x=6$	4
5	$x + 11 = 14$	$x + 3 = 11$	$x + 4 = 11$		$x=3$	$x=8$	$x=7$	5
6	$x + 10 = 13$	$x + 17 = 26$	$x + 7 = 11$		$x=3$	$x=9$	$x=4$	6
7	$x + 17 = 17$	$x + 14 = 15$	$x - 9 = 17$		$x=0$	$x=1$	$x=26$	7
8	$x + 8 = 13$	$x + 13 = 18$	$x - 12 = 13$		$x=5$	$x=5$	$x=25$	8
9	$x + 15 = 24$	$x + 15 = 22$	$x + 3 = 5$		$x=9$	$x=7$	$x=2$	9
10	$x + 14 = 15$	$x + 13 = 20$	$x + 4 = 7$		$x=1$	$x=7$	$x=3$	10
11	$x + 10 = 13$	$x - 10 = 20$	$x + 12 = 14$		$x=3$	$x=30$	$x=2$	11
12	$x - 13 = 18$	$x + 11 = 11$	$x + 7 = 13$		$x=31$	$x=0$	$x=6$	12
13	$x + 11 = 14$	$x - 3 = 6$	$x + 9 = 23$		$x=3$	$x=9$	$x=14$	13
14	$x + 13 = 17$	$x + 8 = 20$	$x + 8 = 16$		$x=4$	$x=12$	$x=8$	14
15	$x + 6 = 13$	$x + 3 = 9$	$x + 23 = 27$		$x=7$	$x=6$	$x=4$	15
16	$x + 2 = 10$	$x + 4 = 8$	$x + 15 = 25$		$x=8$	$x=4$	$x=10$	16
17	$x + 1 = 5$	$x + 13 = 17$	$x - 1 = 9$		$x=4$	$x=4$	$x=10$	17
18	$x + 13 = 16$	$x + 13 = 18$	$x + 16 = 22$		$x=3$	$x=5$	$x=6$	18
19	$x - 7 = 10$	$x - 19 = 12$	$x + 6 = 56$		$x=17$	$x=33$	$x=50$	19
20	$x - 16 = 29$	$x + 11 = 12$	$x + 2 = 4$		$x=45$	$x=1$	$x=2$	20

module I

$$x + b = c$$



niv.2 : Résous les équations avec des entiers.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$-x + 5 = -7$	$x + 14 = -22$	$-x + 8 = 41$		$x = 12$	$x = -36$	$x = -33$	1
2	$-x - 4 = -31$	$x - 1 = -2$	$-x + 12 = 12$		$x = 27$	$x = -1$	$x = 0$	2
3	$-x + 8 = 12$	$x - 6 = 6$	$x - 21 = 9$		$x = -4$	$x = 12$	$x = 30$	3
4	$-x - 8 = 19$	$x + 18 = 4$	$-x - 1 = -9$		$x = -27$	$x = -14$	$x = 8$	4
5	$x + 2 = -18$	$-x - 2 = -20$	$-x + 41 = 23$		$x = -20$	$x = 18$	$x = 18$	5
6	$40 - x = -18$	$-x + 10 = 14$	$x - 1 = 8$		$x = 58$	$x = -4$	$x = 9$	6
7	$x - 22 = -44$	$-x + 11 = 16$	$x - 19 = -4$		$x = -22$	$x = -5$	$x = 15$	7
8	$x + 12 = -12$	$-x + 41 = -41$	$x - 3 = -12$		$x = -24$	$x = 82$	$x = -9$	8
9	$x + 10 = 3$	$x - 12 = 5$	$x + 19 = 19$		$x = -7$	$x = 17$	$x = 0$	9
10	$x + 2 = 1$	$x + 15 = 9$	$x - 16 = -10$		$x = -1$	$x = -6$	$x = 6$	10
11	$x - 16 = 19$	$-x + 4 = 7$	$x - 19 = -17$		$x = 35$	$x = -3$	$x = 2$	11
12	$x - 10 = -20$	$x + 1 = -5$	$x + 2 = -10$		$x = -10$	$x = -6$	$x = -12$	12
13	$x + 8 = 2$	$-x + 10 = 7$	$x - 1 = 8$		$x = -6$	$x = 3$	$x = 9$	13
14	$x - 4 = -4$	$x + 11 = 11$	$x - 2 = -4$		$x = 0$	$x = 0$	$x = -2$	14
15	$-x + 12 = 21$	$-x + 3 = 7$	$x - 18 = -13$		$x = -9$	$x = -4$	$x = 5$	15
16	$-x + 8 = 12$	$x - 11 = -19$	$x + 1 = 12$		$x = -4$	$x = -8$	$x = 11$	16
17	$-x + 2 = -23$	$x + 16 = 12$	$-x + 17 = 9$		$x = 25$	$x = -4$	$x = 8$	17
18	$x + 12 = -8$	$x - 5 = 12$	$x + 19 = 25$		$x = -20$	$x = 17$	$x = 6$	18
19	$x - 2 = 3$	$x + 3 = -6$	$x - 6 = -10$		$x = 5$	$x = -9$	$x = -4$	19
20	$-x + 4 = -17$	$x + 7 = 0$	$-x + 9 = 21$		$x = 21$	$x = -7$	$x = -12$	20

module I

$$x + b = c$$



niv.3 : Résous les équations avec des fractions.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$-2 + x = \frac{1}{5}$	$14 - x = \frac{-3}{2}$	$\frac{1}{2} + x = \frac{1}{4}$		$x = \frac{11}{5}$	$x = \frac{31}{2}$	$x = \frac{-1}{4}$	1
2	$x + 4 = \frac{8}{3}$	$x + 2 = \frac{1}{2}$	$x - 1 = \frac{-1}{5}$		$x = \frac{-4}{3}$	$x = \frac{-3}{2}$	$x = \frac{4}{5}$	2
3	$3 - x = \frac{14}{4}$	$x - 4 = \frac{8}{7}$	$x - \frac{3}{2} = 4$		$x = \frac{-1}{2}$	$x = \frac{36}{7}$	$x = \frac{7}{4}$	3
4	$x + 5 = \frac{4}{3}$	$3 = x + \frac{1}{5}$	$x + 4 = \frac{1}{8}$		$x = \frac{-11}{3}$	$x = \frac{14}{5}$	$x = \frac{31}{8}$	4
5	$x + \frac{9}{2} = 4$	$-2 + x = \frac{1}{6}$	$\frac{3}{5} - x = 5$		$x = \frac{-1}{2}$	$x = \frac{13}{6}$	$x = \frac{-22}{5}$	5
6	$x - 4 = \frac{15}{4}$	$x + 4 = \frac{8}{11}$	$x - \frac{4}{3} = 2$		$x = \frac{31}{4}$	$x = \frac{52}{11}$	$x = \frac{10}{3}$	6
7	$2 + x = \frac{8}{5}$	$3 = \frac{5}{2} + x$	$\frac{1}{5} - x = -2$		$x = \frac{-2}{5}$	$x = \frac{1}{2}$	$x = \frac{11}{5}$	7
8	$x - \frac{5}{2} = 12$	$x + 3 = \frac{11}{3}$	$x + 8 = \frac{4}{6}$		$x = \frac{29}{2}$	$x = \frac{20}{3}$	$x = \frac{-44}{6}$	8
9	$-2 + x = \frac{1}{5}$	$x - \frac{7}{2} = \frac{7}{2}$	$x + \frac{4}{5} = 2$		$x = \frac{11}{5}$	$x = 7$	$x = \frac{14}{5}$	9
10	$x + 3 = \frac{6}{5}$	$x + \frac{4}{3} = 17$	$x + \frac{1}{3} = 12$		$x = \frac{-3}{5}$	$x = \frac{47}{3}$	$x = \frac{37}{3}$	10
11	$\frac{1}{6} = -2 + x$	$\frac{1}{3} = -3 + x$	$-x + 1 = \frac{4}{9}$		$x = \frac{13}{6}$	$x = \frac{10}{3}$	$x = \frac{5}{9}$	11
12	$x - \frac{3}{2} = \frac{1}{4}$	$\frac{-1}{5} = x - 1$	$x + 3 = \frac{5}{3}$		$x = \frac{7}{4}$	$x = \frac{4}{5}$	$x = \frac{-4}{3}$	12
13	$-4 + x = \frac{1}{4}$	$-2 + x = \frac{2}{3}$	$x - \frac{4}{7} = 1$		$x = \frac{17}{4}$	$x = \frac{8}{3}$	$x = \frac{11}{7}$	13
14	$\frac{1}{3} = -3 + x$	$\frac{5}{6} = -2 + x$	$-x + 9 = \frac{7}{3}$		$x = \frac{10}{3}$	$x = \frac{17}{6}$	$x = \frac{20}{3}$	14
15	$-3 + x = \frac{2}{3}$	$x + 2 = \frac{1}{2}$	$x + \frac{4}{3} = 5$		$x = \frac{11}{3}$	$x = \frac{-3}{2}$	$x = \frac{16}{3}$	15
16	$1 = \frac{3}{2} + x$	$3 = \frac{-2}{5} + x$	$10 - x = \frac{29}{3}$		$x = \frac{-1}{2}$	$x = \frac{17}{5}$	$x = \frac{1}{3}$	16
17	$5 = \frac{-2}{3} + x$	$\frac{4}{3} + x = 3$	$x + 2 = \frac{10}{3}$		$x = \frac{17}{3}$	$x = \frac{13}{3}$	$x = \frac{4}{3}$	17

module II

$$ax = b$$

$$\begin{cases} 2x+1 \\ =3 \end{cases}$$

niv.1 : Résous les équations avec des naturels.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$3x = 9$	$2x = 10$	$2x = 20$		$x = 3$	$x = 5$	$x = 10$	1
2	$4x = 20$	$10x = 30$	$7x = 0$		$x = 5$	$x = 3$	$x = 0$	2
3	$6x = 24$	$3x = 15$	$4x = 4$		$x = 4$	$x = 5$	$x = 1$	3
4	$5x = 0$	$9x = 36$	$8x = 24$		$x = 0$	$x = 4$	$x = 3$	4
5	$9x = 18$	$4x = 28$	$12x = 48$		$x = 2$	$x = 7$	$x = 4$	5
6	$4x = 12$	$8x = 48$	$7x = 7$		$x = 3$	$x = 6$	$x = 1$	6
7	$5x = 10$	$5x = 45$	$11x = 99$		$x = 2$	$x = 9$	$x = 9$	7
8	$2x = 22$	$7x = 49$	$9x = 63$		$x = 11$	$x = 7$	$x = 7$	8
9	$16x = 32$	$6x = 48$	$3x = 24$		$x = 2$	$x = 8$	$x = 8$	9
	$6x = 18$	$11x = 55$	$6x = 12$		$x = 3$	$x = 5$	$x = 2$	10
11	$12x = 96$	$4x = 44$	$10x = 90$		$x = 6$	$x = 11$	$x = 9$	11
12	$3x = 12$	$8x = 32$	$5x = 15$		$x = 4$	$x = 4$	$x = 3$	12
13	$6x = 42$	$3x = 39$	$9x = 18$		$x = 7$	$x = 13$	$x = 2$	13
14	$8x = 32$	$7x = 35$	$4x = 20$		$x = 4$	$x = 5$	$x = 5$	14
15	$7x = 49$	$2x = 28$	$8x = 48$		$x = 7$	$x = 14$	$x = 6$	15
16	$9x = 9$	$6x = 48$	$3x = 21$		$x = 1$	$x = 8$	$x = 7$	16
17	$4x = 12$	$4x = 8$	$7x = 28$		$x = 3$	$x = 2$	$x = 4$	17
18	$11x = 22$	$5x = 75$	$2x = 4$		$x = 2$	$x = 15$	$x = 2$	18
19	$8x = 40$	$9x = 81$	$6x = 78$		$x = 5$	$x = 9$	$x = 13$	19
20	$5x = 25$	$10x = 70$	$3x = 18$		$x = 5$	$x = 7$	$x = 6$	20

module II

niv.2 : Résous les équations avec entiers.

$$ax = b$$

$$\begin{cases} 2x+1 \\ =3 \end{cases}$$



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$3x = 15$	$17x = -51$	$14x = -42$		$x = 5$	$x = -3$	$x = -3$	1
2	$-5x = 30$	$-4x = 8$	$-7x = -28$		$x = -6$	$x = -2$	$x = 4$	2
3	$4x = -16$	$-3x = -21$	$13x = -117$		$x = -4$	$x = 7$	$x = -9$	3
4	$-8x = 56$	$-14x = 140$	$-8x = 64$		$x = -7$	$x = -10$	$x = -8$	4
5	$5x = -45$	$-16x = -176$	$-12x = 156$		$x = -9$	$x = 11$	$x = 13$	5
6	$-7x = 84$	$-15x = 75$	$9x = 81$		$x = -12$	$x = -5$	$x = 9$	6
7	$-x = 3$	$7x = -49$	$-11x = 109$		$x = -3$	$x = -7$	$x = -9$	7
8	$-3x = 24$	$-3x = 0$	$10x = 40$		$x = -8$	$x = 0$	$x = 4$	8
9	$2x = -12$	$20x = -60$	$-10x = 170$		$x = -6$	$x = -3$	$x = -17$	9
10	$10x = -60$	$-x = -6$	$-x = 29$		$x = -6$	$x = 6$	$x = -29$	10
11	$-9x = 72$	$-19x = 95$	$2x = 102$		$x = -8$	$x = -5$	$x = 51$	11
12	$-4x = 12$	$2x = -42$	$-3x = 39$		$x = -3$	$x = -21$	$x = -13$	12
13	$3x = 9$	$-18x = -54$	$-5x = 175$		$x = 3$	$x = 3$	$x = -35$	13
14	$7x = 91$	$3x = -3$	$7x = -42$		$x = 13$	$x = -1$	$x = -6$	14
15	$4x = -68$	$17x = -68$	$11x = 121$		$x = -17$	$x = -4$	$x = 11$	15
16	$-3x = -48$	$-4x = 72$	$-13x = 182$		$x = 16$	$x = -18$	$x = -14$	16
17	$8x = -120$	$16x = -256$	$17x = 187$		$x = -15$	$x = -16$	$x = 11$	17
18	$5x = -30$	$5x = 95$	$-23x = 115$		$x = -6$	$x = -4$	$x = -5$	18
19	$-20x = 40$	$-15x = -165$	$-19x = -361$		$x = -2$	$x = 0$	$x = 19$	19
20	$11x = 33$	$-6x = 12$	$-24x = -216$		$x = -3$	$x = 4$	$x = 9$	20

module II

$$ax = b$$



niv.3 : Résous les équations avec des fractions.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$4x = \frac{2}{3}$	$3 = \frac{x}{5}$	$\frac{5x}{3} = 1$		$x = \frac{8}{3}$	$x = 15$	$x = \frac{3}{5}$	1
2	$-4x = \frac{2}{5}$	$\frac{x}{3} = -2$	$\frac{2}{3} = 4x$		$x = \frac{-16}{5}$	$x = -6$	$x = \frac{1}{6}$	2
3	$\frac{x}{2} = 6$	$6 = \frac{x}{4}$	$\frac{2x}{9} = 4$		$x = 12$	$x = 24$	$x = 18$	3
4	$\frac{x}{5} = -2$	$\frac{14x}{7} = 3$	$\frac{-2x}{5} = 3$		$x = -10$	$x = \frac{3}{2}$	$x = \frac{-15}{2}$	4
5	$10x = \frac{50}{3}$	$\frac{2}{5} = 3x$	$-1 = \frac{x}{3}$		$x = \frac{5}{3}$	$x = \frac{2}{15}$	$x = -3$	5
6	$3x = \frac{23}{3}$	$6 = \frac{2x}{7}$	$\frac{x}{4} = 3$		$x = \frac{23}{9}$	$x = 21$	$x = 12$	6
7	$2x = \frac{3}{4}$	$\frac{-21x}{3} = -4$	$\frac{-5}{7} = 3x$		$x = \frac{3}{2}$	$x = \frac{4}{7}$	$x = \frac{-5}{21}$	7
8	$8x = \frac{3}{4}$	$-5 = \frac{-x}{7}$	$\frac{-x}{2} = 4$		$x = \frac{3}{32}$	$x = 35$	$x = -8$	8
9	$-5 = \frac{x}{3}$	$\frac{9}{5} = 3x$	$\frac{3x}{5} = 10$		$x = -15$	$x = \frac{3}{5}$	$x = \frac{50}{3}$	9
10	$4 = \frac{x}{5}$	$\frac{6}{5} = -4x$	$\frac{x}{5} = 3$		$x = 20$	$x = \frac{-3}{10}$	$x = 15$	10
11	$\frac{x}{3} = 4$	$\frac{-5}{7} = 3x$	$\frac{5x}{8} = 4x$		$x = 12$	$x = \frac{-5}{21}$	$x = \frac{32}{5}$	11
12	$\frac{2}{5} = 3x$	$\frac{-2x}{3} = -7$	$-7x = \frac{5}{6}$		$x = \frac{2}{15}$	$x = \frac{21}{2}$	$x = \frac{-5}{42}$	12
13	$\frac{2x}{5} = 8$	$\frac{5}{2} = 3x$	$10x = \frac{2}{5}$		$x = 20$	$x = \frac{5}{6}$	$x = \frac{1}{25}$	13
14	$\frac{5x}{3} = 7$	$\frac{x}{5} = -3$	$4x = \frac{-2}{6}$		$x = \frac{21}{5}$	$x = -15$	$x = \frac{-1}{12}$	14
15	$\frac{2x}{7} = -3$	$2 = \frac{2x}{4}$	$-7x = \frac{2}{9}$		$x = \frac{-21}{7}$	$x = 4$	$x = \frac{-2}{63}$	15
16	$\frac{-7x}{3} = 21$	$\frac{3x}{2} = -3$	$\frac{2x}{3} = 5$		$x = -9$	$x = -1$	$x = \frac{15}{2}$	16
17	$\frac{5x}{4} = 15$	$\frac{2}{5} = 5x$	$\frac{x}{6} = 9$		$x = 12$	$x = \frac{2}{25}$	$x = 63$	17

module III

$$x + b = c \text{ ou } ax = b$$

$$2x+1=3$$

niv.1 : Résous les équations avec des entiers.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$x - 18 = -10$	$x - 2 = -12$	$x - 2 = -12$		$x = 8$	$x = -10$	$x = -10$	1
2	$x + 17 = 26$	$x + 16 = 13$	$x - 18 = -13$		$x = 9$	$x = -3$	$x = 5$	2
3	$x + 2 = -4$	$x - 18 = -13$	$-4x = -12$		$x = -6$	$x = 5$	$x = 3$	3
4	$x - 4 = -8$	$x - 1 = -6$	$x + 8 = 13$		$x = -4$	$x = -5$	$x = 5$	4
5	$-2x = -20$	$-4x = -12$	$x + 15 = 24$		$x = 10$	$x = 3$	$x = 9$	5
6	$3x = 9$	$x + 17 = 17$	$x + 17 = 26$		$x = 3$	$x = 0$	$x = 9$	6
7	$x - 18 = -26$	$x + 8 = 13$	$x - 4 = -8$		$x = -8$	$x = 5$	$x = -4$	7
8	$x - 5 = -7$	$4x = 24$	$3x = 9$		$x = -2$	$x = 6$	$x = 3$	8
9	$x + 14 = 15$	$x + 15 = 24$	$x - 5 = -7$		$x = 1$	$x = 9$	$x = -2$	9
10	$x + 6 = 15$	$-5x = -10$	$x + 6 = 15$		$x = 9$	$x = 2$	$x = 9$	10
11	$4x = 20$	$x - 18 = -10$	$x - 4 = -4$		$x = 5$	$x = 8$	$x = 0$	11
12	$x - 4 = -4$	$x + 2 = -4$	$x + 3 = -1$		$x = 0$	$x = -6$	$x = -4$	12
13	$x - 7 = -1$	$-2x = -20$	$x + 1 = 6$		$x = 6$	$x = 10$	$x = 5$	13
14	$x + 3 = -1$	$x - 18 = -26$	$x + 17 = 14$		$x = -4$	$x = -8$	$x = -3$	14
15	$4x = -24$	$x + 14 = 15$	$4x = 20$		$x = -6$	$x = 1$	$x = 5$	15
16	$x + 1 = 6$	$4x = 20$	$x + 16 = 13$		$x = 5$	$x = 5$	$x = -3$	16
17	$-5x = 0$	$x - 7 = -1$	$x - 1 = -6$		$x = 0$	$x = 6$	$x = -5$	17
18	$x + 17 = 14$	$4x = -24$	$x + 17 = 17$		$x = -3$	$x = -6$	$x = 0$	18
19	$x - 17 = -13$	$-5x = 0$	$4x = 24$		$x = 5$	$x = 0$	$x = 6$	19
20	$4x = 20$	$x - 17 = -13$	$-5x = -10$		$x = 5$	$x = 4$	$x = 2$	20

module III

$$x + b = c \text{ ou } ax = b$$

niv.1 : Résous les équations avec des entiers.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$x + 10 = 3$	$x - 12 = -13$	$4x = -24$		$x = -7$	$x = -1$	$x = -6$	1
2	$4x = -12$	$-5x = -15$	$4x = -8$		$x = -3$	$x = 3$	$x = -2$	2
3	$x + 3 = 11$	$x + 3 = 10$	$x - 7 = -7$		$x = 8$	$x = 7$	$x = 0$	3
4	$3x = -24$	$x + 2 = 1$	$x + 8 = 11$		$x = -8$	$x = -1$	$x = 3$	4
5	$x - 11 = -1$	$x + 6 = -3$	$2x = 18$		$x = 10$	$x = -9$	$x = 9$	5
6	$2x = 6$	$4x = 0$	$x + 3 = -2$		$x = 3$	$x = 0$	$x = -5$	6
7	$x - 18 = -23$	$2x = -10$	$x + 12 = 6$		$x = -5$	$x = -5$	$x = -6$	7
8	$2x = 18$	$x + 12 = 14$	$-4x = -28$		$x = 9$	$x = 2$	$x = 7$	8
9	$x + 8 = 12$	$x + 5 = -3$	$x - 19 = -16$		$x = 4$	$x = -8$	$x = 3$	9
10	$x + 13 = 21$	$x + 17 = 17$	$4x = -16$		$x = 8$	$x = 0$	$x = -4$	10
11	$3x = -18$	$x + 3 = 3$	$x + 18 = 19$		$x = -6$	$x = 0$	$x = 1$	11
12	$x + 7 = 15$	$-4x = 32$	$-2x = -16$		$x = 8$	$x = -8$	$x = 8$	12
13	$x + 11 = 4$	$x - 18 = -13$	$-3x = -18$		$x = -7$	$x = 5$	$x = 6$	13
14	$-3x = 18$	$-3x = -6$	$3x = -30$		$x = -6$	$x = 2$	$x = -10$	14
15	$-3x = -24$	$x + 4 = 7$	$-2x = -4$		$x = 8$	$x = 3$	$x = 2$	15
16	$x - 3 = 5$	$x - 18 = -12$	$2x = -14$		$x = 8$	$x = 6$	$x = -7$	16
17	$x + 11 = 7$	$x + 1 = -5$	$-4x = -24$		$x = -4$	$x = -6$	$x = 6$	17
18	$x - 17 = -9$	$x + 8 = 16$	$-3x = -24$		$x = 8$	$x = 8$	$x = 8$	18
19	$-5x = -30$	$-5x = 15$	$x - 6 = -4$		$x = 6$	$x = -3$	$x = 2$	19
20	$4x = -36$	$x - 4 = 3$	$x - 7 = -10$		$x = -9$	$x = 7$	$x = -3$	20

module III

$$x + b = c \text{ ou } ax = b$$



niv.1 : Résous les équations avec des entiers.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$x - 19 = -16$	$x - 13 = -5$	$2x = -8$		$x = 3$	$x = 8$	$x = -4$	1
2	$3x = 0$	$-4x = 8$	$3x = -24$		$x = 0$	$x = -2$	$x = -8$	2
3	$3x = -12$	$-3x = -21$	$2x = -8$		$x = -4$	$x = 7$	$x = -4$	3
4	$-3x = -21$	$x - 10 = -20$	$4x = -28$		$x = 7$	$x = -10$	$x = -7$	4
5	$x - 18 = -25$	$x - 11 = -11$	$x + 11 = 11$		$x = -7$	$x = 0$	$x = 0$	5
6	$x + 5 = 14$	$-3x = 15$	$-3x = 18$		$x = 9$	$x = -5$	$x = -6$	6
7	$4x = 36$	$x - 3 = -6$	$4x = 40$		$x = 9$	$x = -3$	$x = 10$	7
8	$-3x = 24$	$x - 7 = -3$	$3x = 27$		$x = -8$	$x = 4$	$x = 9$	8
9	$2x = -12$	$-3x = 12$	$x + 14 = 22$		$x = -6$	$x = -4$	$x = 8$	9
10	$-2x = 12$	$4x = 16$	$x + 2 = -6$		$x = -6$	$x = 4$	$x = -8$	10
11	$5x = 45$	$x - 10 = -3$	$x + 3 = 7$		$x = 9$	$x = 7$	$x = 4$	11
12	$-4x = 12$	$-2x = -12$	$-2x = -36$		$x = -3$	$x = 6$	$x = 18$	12
13	$3x = 9$	$-5x = -50$	$x - 4 = 1$		$x = 3$	$x = 10$	$x = 5$	13
14	$x - 7 = -11$	$x + 8 = -2$	$x + 13 = 9$		$x = -4$	$x = -10$	$x = -4$	14
15	$x + 4 = 4$	$-3x = 18$	$x + 18 = 16$		$x = 0$	$x = -6$	$x = -2$	15
16	$x + 17 = 8$	$x + 9 = 3$	$x + 18 = 23$		$x = -9$	$x = -6$	$x = 5$	16
17	$x + 3 = 5$	$2x = -16$	$x + 5 = 15$		$x = 2$	$x = -8$	$x = 10$	17
18	$x + 12 = 11$	$x + 8 = 4$	$x - 12 = -19$		$x = -1$	$x = -4$	$x = -7$	18
19	$x - 16 = -23$	$-5x = 0$	$x + 16 = 12$		$x = -7$	$x = 0$	$x = -4$	19
20	$x + 2 = 4$	$x + 13 = 17$	$x + 5 = 6$		$x = 2$	$x = 4$	$x = 1$	20



niv.2 : Résous les équations avec des fractions.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$-2 + x = \frac{1}{5}$	$14 - x = \frac{-3}{2}$	$X - \frac{1}{4} = 6$		$x = \frac{11}{5}$	$x = \frac{31}{2}$	$x = \frac{25}{4}$	1
2	$3 - x = \frac{14}{4}$	$x + \frac{8}{5} = 4$	$-5 + x = \frac{3}{4}$		$x = \frac{13}{2}$	$x = \frac{12}{5}$	$x = \frac{23}{4}$	2
3	$x + \frac{1}{2} = \frac{3}{4}$	$x - 4 = \frac{8}{7}$	$x - \frac{7}{9} = 9$		$x = \frac{1}{4}$	$x = \frac{36}{7}$	$x = \frac{88}{9}$	3
4	$x + \frac{9}{2} = 4$	$x - \frac{7}{3} = 9$	$4 - x = \frac{3}{2}$		$x = \frac{-1}{2}$	$x = \frac{34}{3}$	$x = \frac{5}{2}$	4
5	$\frac{3}{2} + x = \frac{7}{4}$	$-2 + x = \frac{1}{6}$	$x - \frac{1}{4} = 5$		$x = \frac{1}{4}$	$x = \frac{13}{6}$	$x = \frac{21}{4}$	5
6	$2 + x = \frac{8}{5}$	$X - \frac{1}{4} = 4$	$x - \frac{1}{2} = \frac{3}{4}$		$x = \frac{-2}{5}$	$x = \frac{17}{4}$	$x = \frac{5}{4}$	6
7	$X - 8 = \frac{59}{5}$	$\frac{5}{6} = -3 + x$	$\frac{2}{5} + x = 6$		$x = \frac{99}{5}$	$x = \frac{21}{6}$	$x = \frac{28}{5}$	7
8	$\frac{31}{5} = \frac{11}{5} + x$	$x - \frac{1}{11} = 2$	$x - 5 = \frac{4}{7}$		$x = 4$	$x = \frac{23}{11}$	$x = \frac{39}{7}$	8
9	$\frac{5}{13} = X - \frac{6}{13}$	$\frac{-3}{2} = x + 3$	$x - 5 = \frac{11}{14}$		$x = \frac{11}{13}$	$x = \frac{-9}{2}$	$x = \frac{81}{14}$	9
10	$x - \frac{7}{2} = 9$	$\frac{1}{15} = -2 + x$	$3 = \frac{4}{9} - x$		$x = \frac{25}{2}$	$x = \frac{31}{15}$	$x = \frac{-23}{9}$	10
11	$x - \frac{1}{4} = 2$	$6 - x = \frac{7}{2}$	$\frac{3}{5} + x = \frac{7}{4}$		$x = \frac{9}{4}$	$x = \frac{5}{2}$	$x = \frac{23}{20}$	11
12	$\frac{1}{2} = x - \frac{2}{5}$	$\frac{5}{2} + x = \frac{7}{4}$	$\frac{5}{3} = -5 + x$		$x = \frac{9}{10}$	$x = \frac{17}{4}$	$x = \frac{20}{3}$	12
13	$\frac{1}{6} = -2 + x$	$\frac{1}{7} = x + \frac{1}{8}$	$\frac{1}{17} = x - 3$		$x = \frac{13}{6}$	$x = \frac{1}{56}$	$x = \frac{52}{17}$	13
14	$x - \frac{3}{2} = \frac{1}{4}$	$x - \frac{1}{23} = \frac{1}{2}$	$9 - x = \frac{-1}{8}$		$x = \frac{7}{4}$	$x = \frac{25}{46}$	$x = \frac{73}{8}$	14
15	$\frac{2}{3} + x = 6$	$\frac{3}{5} - x = 3$	$\frac{1}{8} = x + \frac{1}{9}$		$x = \frac{16}{3}$	$x = \frac{-12}{5}$	$x = \frac{1}{72}$	15
16	$x = \frac{3}{4} - 5$	$x - 1 = \frac{2}{3}$	$\frac{5}{3} + x = \frac{5}{2}$		$x = \frac{-17}{4}$	$x = \frac{5}{3}$	$x = \frac{5}{6}$	16

module IV

$$ax + b = c$$

$$\begin{cases} 2x+1 \\ =3 \end{cases}$$

niv.1 : Résous les équations, avec entiers et sans ().



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$8x - 3 = 13$	$2x + 7 = 15$	$-2x + 2 = -14$		$x = 2$	$x = 4$	$x = 8$	1
2	$14x + 28 = 42$	$2x - 1 = -17$	$21 - x = 17$		$x = 1$	$x = -8$	$x = 4$	2
3	$-4x + 2 = 14$	$3x + 7 = 13$	$12 + x = 10$		$x = -3$	$x = 2$	$x = -2$	3
4	$-x - 1 = 6$	$14 + 2x = 20$	$16x - 2 = 14$		$x = -7$	$x = 3$	$x = 1$	4
5	$-2x - 3 = -1$	$2x - 3 = -5$	$15x - 4 = 41$		$x = -1$	$x = -1$	$x = 3$	5
6	$12 - x = 15$	$4x + 4 = 40$	$2x + 5 = 9$		$x = -3$	$x = 9$	$x = 2$	6
7	$12 - x = 7$	$-x + 8 = 7$	$-x - 8 = -3$		$x = 5$	$x = 1$	$x = -5$	7
8	$3x - 6 = 3$	$-3x + 7 = 34$	$4x + 3 = -13$		$x = 3$	$x = -9$	$x = -4$	8
9	$4x + 10 = -6$	$8 + x = 5$	$-5x - 6 = 44$		$x = -4$	$x = -3$	$x = -10$	9
10	$4x + 8 = 32$	$3x + 3 = 24$	$3x + 2 = -25$		$x = 6$	$x = 7$	$x = -9$	10
11	$2x + 1 = -15$	$12x + 8 = -4$	$3x - 8 = -8$		$x = -8$	$x = -1$	$x = 0$	11
12	$13x + 6 = 45$	$25x - 10 = 90$	$12x + 12 = 36$		$x = 3$	$x = 4$	$x = 2$	12
13	$77 - 11x = 66$	$2x + 10 = 12$	$-3x + 2 = 32$		$x = 1$	$x = 1$	$x = -10$	13
14	$-3x - 4 = -1$	$90 - 10x = 0$	$-3x + 5 = -7$		$x = -1$	$x = 9$	$x = 4$	14
15	$9x + 3 = 30$	$45 + 5x = 55$	$7x - 4 = 45$		$x = 3$	$x = 2$	$x = 7$	15
16	$-60 - 4x = -76$	$4x - 7 = -43$	$-2x + 2 = -8$		$x = 4$	$x = -9$	$x = 5$	16
17	$13x + 3 = 29$	$25x - 20 = 230$	$2x + 6 = 22$		$x = 2$	$x = 10$	$x = 8$	17
18	$-4x + 6 = 22$	$12x + 3 = 75$	$14x - 7 = 7$		$x = -4$	$x = 6$	$x = 1$	18
19	$-3x + 1 = -14$	$15 + 3x = 30$	$-2x - 9 = -1$		$x = 5$	$x = 5$	$x = -4$	19
20	$-5x + 2 = 12$	$3x + 7 = -2$	$-4x - 2 = -14$		$x = -2$	$x = -3$	$x = 3$	20

module IV

$$ax + b = c$$



niv.2 : Résous les équations, avec entiers et ().



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$4(x - 4) = -28$	$2(2x - 1) = 6$	$3(x + 2) = -18$		$x = -3$	$x = 2$	$x = -8$	1
2	$4(x - 2) = -8$	$4(6 + x) = 12$	$4(x + 3) = 82$		$x = 0$	$x = -3$	$x = 10$	2
3	$2(2x + 4) = 12$	$2(x + 3) = 18$	$-3(x - 3) = -18$		$x = 5$	$x = 6$	$x = 9$	3
4	$3(x - 2) = -12$	$-(x + 4) = -9$	$5(3x - 9) = -30$		$x = -2$	$x = 5$	$x = 1$	4
5	$5(x - 4) = -50$	$5(2x - 2) = -30$	$-3(x + 10) = -3$		$x = -6$	$x = -2$	$x = -9$	5
6	$7(x + 3) = 49$	$3(x + 4) = 39$	$6(4 - x) = 54$		$x = 4$	$x = 9$	$x = -5$	6
7	$-6(x - 3) = -18$	$2(x + 6) = 30$	$4(-x + 3) = 40$		$x = 6$	$x = 9$	$x = -7$	7
8	$8(x + 4) = -8$	$6(x + 5) = 6$	$2(x + 1) = -12$		$x = -5$	$x = -4$	$x = -7$	8
9	$5(4x + 10) = 30$	$-(3x + 4) = -5$	$-4(x - 5) = -16$		$x = -1$	$x = \frac{1}{3}$	$x = 9$	9
10	$10(x - 4) = 40$	$2(x + 7) = 10$	$11(x - 3) = -88$		$x = 8$	$x = -2$	$x = -5$	10
11	$3(x + 4) = 39$	$3(12 + x) = 24$	$-2(2x + 4) = -10$		$x = 9$	$x = -1$	$x = \frac{1}{2}$	11
12	$1(x + 2) = 10$	$4(-x + 3) = -12$	$-4(x + 11) = -20$		$x = 8$	$x = 6$	$x = -6$	12
13	$-3(x + 1) = 6$	$2(2x + 4) = 14$	$5(x - 4) = 10$		$x = -3$	$x = 5$	$x = 6$	13
14	$5(x + 8) = 45$	$3(x + 5) = -7$	$2(x + 3) = 16$		$x = 1$	$x = -6$	$x = 5$	14
15	$-(x + 5) = -9$	$12(x - 4) = 60$	$4(x + 6) = 48$		$x = 4$	$x = 9$	$x = 6$	15
16	$4(x - 9) = -68$	$6(x + 2) = -30$	$3(x - 4) = 3$		$x = -8$	$x = -7$	$x = 5$	16
17	$6(2x + 6) = 0$	$4(x - 6) = -64$	$3(x + 5) = 24$		$x = -3$	$x = -10$	$x = 3$	17
18	$8(x - 4) = -24$	$3(x - 5) = 12$	$4(7x - 5) = 8$		$x = 1$	$x = 9$	$x = 1$	18
19	$4(x + 4) = 56$	$-3(x - 1) = -12$	$8(x - 3) = -96$		$x = 10$	$x = 5$	$x = -9$	19
20	$-3(x + 2) = -33$	$4(x - 4) = -24$	$5(x + 2) = 5$		$x = 9$	$x = -2$	$x = -1$	20

module IV

$$ax + b = c$$

niv.3 : Résous les équations, avec fractions.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$2x - 5 = \frac{2}{3}$	$\frac{11x}{2} + 4 = 26$	$4(x - 5) = \frac{2}{3}$		$x = \frac{17}{6}$	$x = 4$	$x = \frac{31}{6}$	1
2	$14x - 9 = \frac{11}{4}$	$\frac{x}{3} + 5 = 12$	$\frac{4x}{9} - 5 = 49$		$x = \frac{47}{56}$	$x = 21$	$x = \frac{243}{2}$	2
3	$x + 4 = \frac{3}{4}$	$\frac{3x}{4} + 5 = 36$	$\frac{x}{2} + 8 = 3$		$x = \frac{-13}{4}$	$x = \frac{124}{3}$	$x = -10$	3
4	$\frac{1}{5} = 3x - 2$	$\frac{x}{5} + 2 = 3$	$\frac{3x}{2} + 8 = 69$		$x = \frac{11}{15}$	$x = 5$	$x = \frac{122}{3}$	4
5	$x - 7 = \frac{1}{3}$	$\frac{3x}{2} - 8 = 22$	$\frac{5x}{7} - 4 = 14$		$x = \frac{22}{3}$	$x = 20$	$x = \frac{126}{5}$	5
6	$7 - 2x = \frac{3}{5}$	$\frac{x}{2} - 4 = 13$	$\frac{21x}{6} + 5 = 9$		$x = \frac{16}{5}$	$x = 34$	$x = \frac{8}{7}$	6
7	$3 = -2 + \frac{x}{5}$	$\frac{11x}{5} + 4 = 18$	$\frac{-x}{4} - 3 = 7$		$x = 25$	$x = \frac{70}{11}$	$x = \frac{-2}{21}$	7
8	$\frac{11x}{3} + 4 = 15$	$\frac{x}{5} + 2 = 12$	$\frac{x}{3} + 5 = 2x$		$x = 3$	$x = 50$	$x = \frac{5}{2}$	8
9	$\frac{x}{4} + 8 = 3$	$\frac{8x}{4} + 9 = 13$	$\frac{5x}{7} - 1 = 4$		$x = -20$	$x = 2$	$x = \frac{5}{3}$	9
10	$16 - \frac{4x}{2} = 14$	$4 + \frac{14x}{10} = 18$	$\frac{-6x}{8} - 6 = 7$		$x = 1$	$x = 10$	$x = \frac{-52}{3}$	10
11	$\frac{11x}{2} + 8 = 6$	$7 = -2 + \frac{x}{5}$	$\frac{2x}{7} + 4 = 8$		$x = \frac{-4}{11}$	$x = 45$	$x = 14$	11
12	$x - 5 = \frac{11}{3}$	$\frac{11x}{2} + 4 = 26$	$\frac{-9x}{6} - 8 = 3$		$x = \frac{26}{3}$	$x = 4$	$x = \frac{-22}{3}$	12
13	$\frac{15x}{6} + 4 = 12$	$\frac{x}{3} + 5 = 12$	$\frac{-4x}{7} + 5 = 8$		$x = \frac{16}{5}$	$x = 21$	$x = \frac{-21}{4}$	13
14	$14x - 9 = \frac{11}{4}$	$\frac{3x}{4} + 5 = 36$	$\frac{-3x}{5} + 2 = 6$		$x = \frac{47}{14}$	$x = \frac{124}{3}$	$x = \frac{-20}{3}$	14
15	$\frac{8x}{4} + 9 = 13$	$\frac{x}{5} + 2 = 3$	$\frac{6x}{3} + 2 = 5$		$x = 2$	$x = 5$	$x = \frac{3}{2}$	15
16	$\frac{14x}{10} + 4 = 18$	$\frac{3x}{2} - 8 = 22$	$\frac{-4x}{9} + 4 = -4$		$x = 10$	$x = 20$	$x = 18$	16
17	$x + 4 = \frac{11}{3}$	$\frac{25x}{4} = 25$	$\frac{6x}{7} + 2 = -4$		$x = \frac{-1}{3}$	$x = 4$	$x = -7$	17
18	$7 = -2 + \frac{x}{5}$	$\frac{x}{2} - 4 = 13$	$\frac{6x}{4} - 2 = 6$		$x = 45$	$x = 34$	$x = \frac{16}{3}$	18
19	$\frac{x}{3} + 8 = 9$	$\frac{11x}{5} + 4 = 18$	$\frac{-2x}{5} + 3 = 2$		$x = 3$	$x = \frac{70}{11}$	$x = \frac{-5}{2}$	19
20	$\frac{6x}{7} + 2 = 10$	$\frac{x}{5} + 2 = 12$	$\frac{-9x}{5} - 4 = -7$		$x = \frac{28}{3}$	$x = 50$	$x = \frac{5}{3}$	20



niv.1 : Résous les équations avec entiers et sans ().



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$5x - 8 = 3x - 22$	$x + 7 = 4x + 22$	$-x - 1 = 3x - 21$		$x = -7$	$x = -5$	$x = 5$	1
2	$3x + 9 = -4x + 72$	$2x - 10 = -4x - 28$	$-3x + 9 = 4x + 79$		$x = 9$	$x = -3$	$x = -10$	2
3	$5x + 2 = 2x - 10$	$3x - 9 = 2x - 19$	$5x + 9 = -2x - 33$		$x = -4$	$x = -10$	$x = -6$	3
4	$3x - 7 = 2x - 9$	$3x - 8 = -x - 28$	$3x + 5 = -5x - 11$		$x = -2$	$x = -5$	$x = -2$	4
5	$x - 7 = -4x - 2$	$-x - 1 = 4x - 16$	$-2x + 8 = 2x + 40$		$x = 1$	$x = 3$	$x = -8$	5
6	$4x + 4 = -x + 49$	$-2x - 2 = 3x - 12$	$3x - 8 = 4x - 3$		$x = 9$	$x = 2$	$x = -5$	6
7	$-5x - 8 = -2x - 20$	$2x + 9 = 3x$	$-4x + 7 = -5x + 16$		$x = 4$	$x = 9$	$x = 9$	7
8	$4x - 3 = -4x - 75$	$-3x - 4 = -2x - 6$	$-4x - 6 = -2x + 12$		$x = -9$	$x = 2$	$x = -9$	8
9	$x - 3 = -2x - 21$	$-x + 4 = 3x + 16$	$2x + 2 = -5x + 72$		$x = -6$	$x = -3$	$x = 10$	9
10	$2x + 3 = 3x + 4$	$3x - 9 = 4x - 18$	$-x - 7 = x + 1$		$x = -1$	$x = 9$	$x = -4$	10
11	$-3x + 7 = 3x + 7$	$3x + 7 = x - 1$	$-3x + 3 = -2x - 1$		$x = 0$	$x = -4$	$x = 4$	11
12	$-x + 7 = x + 23$	$2x - 7 = 3x - 16$	$-3x - 7 = x + 9$		$x = -8$	$x = 9$	$x = -4$	12
13	$-4x + 9 = -x$	$2x - 4 = x - 7$	$-x + 9 = 5x - 51$		$x = 3$	$x = -3$	$x = 10$	13
14	$-3x + 4 = 2x - 26$	$5x + 7 = 3x - 11$	$3x - 1 = -2x + 14$		$x = 6$	$x = -9$	$x = 3$	14
15	$2x - 3 = 4x - 23$	$3x - 7 = -4x + 42$	$2x - 6 = 3x - 13$		$x = 10$	$x = -7$	$x = 7$	15
16	$3x - 3 = 4x$	$3x + 7 = -2x + 17$	$2x + 18 = -4x - 72$		$x = -3$	$x = 2$	$x = -15$	16
17	$-2x - 6 = 3x - 36$	$2x + 7 = 3x - 3$	$-3x - 18 = x + 54$		$x = 6$	$x = 10$	$x = -9$	17
18	$3x - 4 = -x + 24$	$-5x - 4 = 2x + 31$	$2x + 9 = -x - 15$		$x = 7$	$x = -5$	$x = -8$	18
19	$3x - 1 = -2x - 21$	$5x + 7 = -x + 37$	$3x - 5 = 5x - 7$		$x = -4$	$x = 5$	$x = 1$	19
20	$4x + 4 = -2x + 22$	$-5x + 4 = x - 2$	$-2x + 5 = 3x$		$x = 3$	$x = 1$	$x = 1$	20



niv.2 : Résous les équations avec entiers et ().



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$3(x + 4) = 4x + 3$	$2(x - 6) = x - 13$	$-3(x + 4) = -4x - 11$		$x = 9$	$x = -1$	$x = 1$	1
2	$2(x + 3) = x - 3$	$5(x - 6) = -3x - 94$	$-3(x + 8) = 2x + 21$		$x = -9$	$x = -8$	$x = -9$	2
3	$-2(x - 1) = 5x + 23$	$-2(x + 6) = 2x - 4$	$-5(x + 8) = 5x - 70$		$x = -3$	$x = -2$	$x = 3$	3
4	$3(x + 10) = -2x - 5$	$3(x - 3) = 2x - 7$	$-3(x - 6) = 2x + 18$		$x = -7$	$x = 2$	$x = 0$	4
5	$4(x - 4) = 5x - 14$	$3(x - 1) = -4x - 52$	$3(x + 5) = 4x + 8$		$x = -2$	$x = -7$	$x = 7$	5
6	$-4(x + 1) = -3x - 13$	$4(x + 7) = -2x + 28$	$-3(x - 3) = 2x + 59$		$x = 9$	$x = 0$	$x = -10$	6
7	$-(x + 1) = x - 17$	$3(x - 7) = -x - 53$	$-2(x - 3) = 2x + 10$		$x = 8$	$x = -8$	$x = -1$	7
8	$4(x + 2) = 2x + 2$	$-4(x + 8) = -2x - 42$	$-(x + 4) = x - 6$		$x = -3$	$x = 5$	$x = 1$	8
9	$3(x - 4) = 2x - 3$	$3(x - 9) = -2x - 42$	$3(x + 5) = 8x$		$x = 9$	$x = -3$	$x = 3$	9
10	$3(x + 3) = -4x + 72$	$-2(x + 7) = -4x - 6$	$15(x - 3) = 15 - 15x$		$x = 9$	$x = 4$	$x = 2$	10
11	$7(x + 2) = 10x + 2$	$24x = 8(x - 4)$	$-(x + 7) = x + 3$		$x = 4$	$x = -2$	$x = -5$	11
12	$-6(x + 3) = -12x$	$16(x + 8) = -10x - 2$	$13(x + 3) = 25x - 9$		$x = 3$	$x = -5$	$x = 4$	12
13	$4(x + 5) = -2x + 56$	$2(x - 4) = 3x - 13$	$12(x + 4) = 16x + 20$		$x = 6$	$x = 5$	$x = 7$	13
14	$-4(x + 6) = 2x - 30$	$2(x - 9) = 4x - 10$	$15(x + 4) = 40x + 10$		$x = 1$	$x = -4$	$x = 2$	14
15	$3(x - 3) = 5x - 25$	$3(x - 4) = 5x - 18$	$-(x + 5) = -4x - 8$		$x = 8$	$x = 3$	$x = -1$	15
16	$2(x + 3) = x + 6$	$-4(x - 3) = -5x + 2$	$3(x + 8) = 14 - 7x$		$x = 0$	$x = -10$	$x = -1$	16
17	$4(x - 9) = 12x + 4$	$3(x + 4) = x + 26$	$5(x - 6) = 2x - 6$		$x = -4$	$x = 7$	$x = 8$	17
18	$5x + 5 = 2(x + 1)$	$4(x - 2) = 2x$	$3(x - 1) = 2x - 11$		$x = -1$	$x = 4$	$x = -8$	18
19	$3(x - 1) = 4x - 1$	$5(x + 6) = -x + 36$	$2(x - 5) = 6x + 2$		$x = -2$	$x = 1$	$x = -3$	19
20	$3(x + 9) = 5x + 17$	$3(x + 7) = 4x + 30$	$-4(x - 7) = x + 68$		$x = 5$	$x = -9$	$x = -8$	20



niv.3 : Résous les équations avec fractions.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$2 - 5x = 3x + \frac{5}{8}$	$\frac{x}{4} + 2 = 3x + \frac{5}{8}$	$2(x - \frac{1}{4}) = x - 3$		$x = 2$	$x = \frac{1}{2}$	$x = \frac{-5}{2}$	1
2	$\frac{11x}{5} - 5 = x + 7$	$\frac{3x}{2} + 4 = 3x + 1$	$x + \frac{3}{2} = 2(x + 5)$		$x = 10$	$x = 2$	$x = \frac{-17}{2}$	2
3	$23x + 4 = \frac{12x}{5}$	$\frac{11x}{3} + 4 = 25 - x$	$2(x - \frac{5}{4}) = -4x - 28$		$x = \frac{9}{2}$	$x = \frac{9}{2}$	$x = \frac{-17}{4}$	3
4	$\frac{15x}{4} = 2x - 5$	$\frac{x}{2} + 4 = 5x + \frac{2}{7}$	$3(x - 3) = 2x - \frac{7}{2}$		$x = \frac{8}{9}$	$x = \frac{52}{53}$	$x = \frac{11}{2}$	4
5	$\frac{13x}{2} = 9x - 4$	$\frac{5x}{2} - 8 = 3x - 22$	$3x - \frac{4}{3} = -(x + 28)$		$x = \frac{8}{5}$	$x = 28$	$x = \frac{-20}{3}$	5
6	$\frac{x}{4} + 3 = 3x + \frac{1}{4}$	$\frac{3x}{4} + 9 = -4x + 2$	$\frac{4x}{3} - 1 = 4(x - 4)$		$x = 1$	$x = \frac{28}{19}$	$x = \frac{45}{8}$	6
7	$5x + \frac{4}{3} = -2x - 3$	$\frac{-5x}{3} + 2 = 2x - 10$	$-2x - \frac{7}{6} = 3(x - 4)$		$x = \frac{-13}{21}$	$x = \frac{6}{11}$	$x = \frac{13}{6}$	7
8	$3x + \frac{5}{3} = -5x - 11$	$3x - 7 = \frac{4x}{5} - 9$	$2x + \frac{2}{3} = 3(x + 4)$		$x = \frac{-19}{12}$	$x = \frac{-10}{11}$	$x = \frac{-34}{3}$	8
9	$-2x + \frac{3}{2} = 2x + 4$	$\frac{x}{6} - 7 = -4x - 2$	$-3x - \frac{4}{5} = -2(x + 3)$		$x = \frac{-5}{6}$	$x = \frac{6}{5}$	$x = \frac{26}{5}$	9
10	$3x - \frac{7}{4} = 4x - 3$	$4x + 4 = \frac{-x}{9} + 9$	$-x + \frac{6}{4} = 3(x + 5)$		$x = \frac{5}{4}$	$x = \frac{45}{37}$	$x = \frac{-27}{8}$	10
11	$-4x + \frac{5}{3} = -5x + 1$	$-5x - 8 = \frac{-2x}{5} - 20$	$3(x - 3) = 4x - \frac{2}{2}$		$x = \frac{-2}{3}$	$x = \frac{-40}{23}$	$x = -8$	11
12	$-4x - \frac{7}{3} = -2x + 1$	$\frac{4x}{5} - 3 = -4x - 75$	$3x + \frac{5}{3} = -3(x - 1)$		$x = \frac{-5}{3}$	$x = -15$	$x = \frac{2}{9}$	12
13	$2x + \frac{3}{5} = -5x + 7$	$\frac{-x}{7} - 3 = -2x - 2$	$2x - \frac{7}{9} = 1(x - 5)$		$x = \frac{32}{35}$	$x = \frac{7}{13}$	$x = \frac{-38}{9}$	13
14	$-x - 7 = x + \frac{5}{2}$	$2x + 3 = \frac{3x}{4} + 4$	$2x - \frac{7}{4} = -(x - 7)$		$x = \frac{-19}{4}$	$x = \frac{4}{5}$	$x = \frac{35}{12}$	14
15	$-3x + 3 = -2x - \frac{3}{8}$	$-3x + 7 = \frac{x}{3} + 7$	$5x + \frac{4}{7} = -2(3x1)$		$x = \frac{27}{8}$	$x = 0$	$x = \frac{-46}{35}$	15
16	$-3x - 7 = x + \frac{7}{9}$	$\frac{2x}{5} + 7 = x + 3$	$3x - \frac{5}{4} = -4(x + 13)$		$x = \frac{-35}{18}$	$x = \frac{20}{3}$	$x = \frac{-29}{4}$	16
17	$-x + \frac{4}{6} = 5x - 5$	$-4x + 9 = \frac{x}{4}$	$3x + \frac{6}{2} = -2(x + 10)$		$x = \frac{17}{18}$	$x = \frac{36}{17}$	$x = \frac{-23}{5}$	17



niv.1 : Résous les équations complexes fractionnaires.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$\frac{15x-5}{10} = 3x+2$	$\frac{6x-3}{4} - 1 = \frac{2x-1}{2}$	$\frac{6x+5}{2} = \frac{5x}{4}$		$x = \frac{-5}{3}$	$x = \frac{5}{2}$	$x = \frac{10}{7}$	1
2	$\frac{5x-3}{6} = 4-x$	$\frac{x-1}{2} = \frac{2x+3}{5}$	$\frac{8x-6}{3} = \frac{7x-3}{4}$		$x = \frac{27}{11}$	$x = 11$	$x = \frac{15}{11}$	2
3	$\frac{x+2}{7} = 5x+1$	$\frac{x-3}{2} = \frac{3+5x}{5}$	$\frac{9x}{10} - 2 = \frac{-9}{3}$		$x = \frac{-5}{34}$	$x = \frac{-21}{5}$	$x = \frac{-10}{9}$	3
4	$\frac{x+3}{9} = 6x-7$	$\frac{x-1}{3} = \frac{2x+1}{5}$	$\frac{x-1}{2} = \frac{2x+3}{5}$		$x = \frac{66}{53}$	$x = -8$	$x = 11$	4
5	$\frac{x-5}{2} = 4x-4$	$\frac{7x+5}{4} = 9x-6$	$\frac{2x+3}{4} = \frac{2-x}{3}$		$x = \frac{3}{7}$	$x = \frac{-5}{3}$	$x = \frac{-1}{10}$	5
6	$\frac{4x-9}{8} = 3x-5$	$\frac{7x-7}{24} = x+3$	$\frac{x-3}{2} = \frac{3+5x}{5}$		$x = \frac{31}{20}$	$x = \frac{-79}{17}$	$x = \frac{-21}{5}$	6
7	$\frac{7x-7}{24} = x+3$	$\frac{4x-3}{6} = \frac{5x+1}{5}$	$\frac{-1}{7} = \frac{3x+3}{2}$		$x = \frac{-79}{17}$	$x = \frac{-21}{10}$	$x = \frac{-23}{21}$	7
8	$\frac{5x-9}{2} = 7x-8$	$\frac{13x-5}{2} = \frac{15x}{5}$	$\frac{x}{4} + 2 = 3x + \frac{5}{8}$		$x = \frac{7}{9}$	$x = \frac{5}{7}$	$x = \frac{14}{33}$	8
9	$\frac{15x}{4} = 2x-5$	$\frac{4x-9}{3} = \frac{9x+3}{4}$	$\frac{2x+2}{4} - \frac{2x+3}{2} = \frac{1}{2}$		$x = \frac{-20}{7}$	$x = \frac{-45}{11}$	$x = -3$	9
10	$\frac{x}{3} + \frac{x-1}{2} = \frac{1}{3}$	$\frac{3x}{14} = \frac{8x+1}{3}$	$\frac{11}{22} + 3x = \frac{6x}{4}$		$x = 1$	$x = \frac{-14}{103}$	$x = \frac{-1}{3}$	10
11	$\frac{x}{4} + 3 = 3x + \frac{1}{4}$	$\frac{8x+6}{3} = \frac{11x}{2}$	$\frac{4x-3}{6} = \frac{5x+1}{5}$		$x = 1$	$x = \frac{12}{17}$	$x = \frac{-21}{10}$	11
12	$\frac{x}{5} - \frac{1-2x}{3} = x - \frac{x+3}{2}$	$\frac{3x-5}{4} = \frac{7x}{9}$	$\frac{13x}{4} = \frac{x+2}{5} + 1$		$x = \frac{-35}{11}$	$x = \frac{-85}{9}$	$x = \frac{28}{61}$	12
13	$\frac{3+x}{2} - \frac{3+x}{3} = 2x - \frac{1}{6}$	$\frac{5x-7}{2} = \frac{4x}{5}$	$\frac{13x-5}{2} = \frac{15x}{5}$		$x = \frac{4}{11}$	$x = \frac{35}{17}$	$x = \frac{5}{7}$	13
14	$\frac{2x-1}{3} = 5 - \frac{x-1}{2}$	$\frac{3x+5}{12} = \frac{x}{7}$	$\frac{8x-6}{3} = \frac{7x-3}{4}$		$x = 5$	$x = \frac{-35}{9}$	$x = \frac{15}{11}$	14
15	$\frac{8x-6}{3} = \frac{7x-3}{4}$	$\frac{3x}{4} + 2 = \frac{-5}{3}$	$\frac{3x+5}{12} = \frac{x}{7}$		$x = \frac{15}{11}$	$x = \frac{-44}{9}$	$x = \frac{-35}{9}$	15
16	$\frac{21x-9}{3} = \frac{8x+4}{16}$	$\frac{2x}{5} + 2 = \frac{4}{8}$	$\frac{8x+6}{3} = \frac{11x}{2}$		$x = \frac{1}{2}$	$x = \frac{-15}{4}$	$x = \frac{12}{17}$	16
17	$\frac{6x+6}{6} = 4x+2$	$\frac{21x-9}{3} = \frac{8x+4}{16}$	$\frac{x-1}{3} = \frac{2x+1}{5}$		$x = \frac{-1}{3}$	$x = \frac{1}{2}$	$x = -8$	17



niv.2 : Résous les équations à 2 inconnues par substitution simple.



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$\begin{cases} 2x = -18 \\ -7x + 4y = 67 \end{cases}$	$\begin{cases} -5x = 5 \\ 6x - 2y = 10 \end{cases}$	$\begin{cases} -8x - 10y = -124 \\ -5y = -30 \end{cases}$		$\begin{cases} x = -9 \\ y = 1 \end{cases}$	$\begin{cases} x = -1 \\ y = -8 \end{cases}$	$\begin{cases} x = 8 \\ y = 6 \end{cases}$	1
2	$\begin{cases} 4x - y = 44 \\ -3y = 24 \end{cases}$	$\begin{cases} -x + 8y = 15 \\ -5x = 35 \end{cases}$	$\begin{cases} 7x - 5y = -31 \\ -8y = 40 \end{cases}$		$\begin{cases} x = 9 \\ y = -8 \end{cases}$	$\begin{cases} x = -7 \\ y = 1 \end{cases}$	$\begin{cases} x = -8 \\ y = -5 \end{cases}$	2
3	$\begin{cases} 5y = 40 \\ -4x + 4y = 48 \end{cases}$	$\begin{cases} -3x - 9y = 48 \\ 5y = -35 \end{cases}$	$\begin{cases} 6x = -48 \\ 9x + 9y = -36 \end{cases}$		$\begin{cases} x = -4 \\ y = 8 \end{cases}$	$\begin{cases} x = 5 \\ y = -7 \end{cases}$	$\begin{cases} x = -8 \\ y = 4 \end{cases}$	3
4	$\begin{cases} 3x - 5y = 15 \\ 6y = 0 \end{cases}$	$\begin{cases} -8y = -48 \\ 7x - 9y = -75 \end{cases}$	$\begin{cases} 3x = -15 \\ -3x - 5y = 60 \end{cases}$		$\begin{cases} x = 5 \\ y = 0 \end{cases}$	$\begin{cases} x = -3 \\ y = 6 \end{cases}$	$\begin{cases} x = -5 \\ y = -9 \end{cases}$	4
5	$\begin{cases} -x = 1 \\ 4x + 9y = 41 \end{cases}$	$\begin{cases} 7x + 4y = -48 \\ -2x = 8 \end{cases}$	$\begin{cases} -4x = 0 \\ -10x + 9y = 27 \end{cases}$		$\begin{cases} x = -1 \\ y = 5 \end{cases}$	$\begin{cases} x = -4 \\ y = -5 \end{cases}$	$\begin{cases} x = 0 \\ y = 3 \end{cases}$	5
6	$\begin{cases} 2x - 9y = -56 \\ -6y = -36 \end{cases}$	$\begin{cases} -4x = 24 \\ -3x - 2y = 30 \end{cases}$	$\begin{cases} 4x + 3y = 14 \\ 2x = 16 \end{cases}$		$\begin{cases} x = -1 \\ y = 6 \end{cases}$	$\begin{cases} x = 6y \\ y = -6 \end{cases}$	$\begin{cases} x = 8 \\ y = -6 \end{cases}$	6
7	$\begin{cases} 9x + 2y = 9 \\ -3y = 0 \end{cases}$	$\begin{cases} 4x + 2y = -12 \\ -8y = 64 \end{cases}$	$\begin{cases} 7x + 5y = -80 \\ -8y = 72 \end{cases}$		$\begin{cases} x = 1 \\ y = 0 \end{cases}$	$\begin{cases} x = 1 \\ y = -8 \end{cases}$	$\begin{cases} x = -5 \\ y = -9 \end{cases}$	7
8	$\begin{cases} -7x + 4y = -8 \\ 5y = -45 \end{cases}$	$\begin{cases} -3y = 12 \\ 2x - 9y = 48 \end{cases}$	$\begin{cases} 5x - 9y = 74 \\ 9x = 36 \end{cases}$		$\begin{cases} x = -4 \\ y = -9 \end{cases}$	$\begin{cases} x = 6 \\ y = -4 \end{cases}$	$\begin{cases} x = 4 \\ y = -6 \end{cases}$	8
9	$\begin{cases} 10x - 10y = 80 \\ -4y = 4 \end{cases}$	$\begin{cases} 10x = -90 \\ 6x - 8y = -86 \end{cases}$	$\begin{cases} -10x + 5y = 30 \\ -2y = 0 \end{cases}$		$\begin{cases} x = 7 \\ y = -1 \end{cases}$	$\begin{cases} x = -9 \\ y = 4 \end{cases}$	$\begin{cases} x = -3 \\ y = 0 \end{cases}$	9
10	$\begin{cases} 7x - 6y = 38 \\ -8y = -24 \end{cases}$	$\begin{cases} 3x + 8y = 81 \\ 9x = 27 \end{cases}$	$\begin{cases} -x - 3y = 15 \\ 3y = -9 \end{cases}$		$\begin{cases} x = 8 \\ y = 3 \end{cases}$	$\begin{cases} x = 3 \\ y = 9 \end{cases}$	$\begin{cases} x = -6 \\ y = -3 \end{cases}$	10



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$\begin{cases} 2x = 4 \\ -2x + 8y = -76 \end{cases}$	$\begin{cases} -3x - 5y = -38 \\ -10y = -40 \end{cases}$	$\begin{cases} 3x = 0 \\ 9x - 2y = 12 \end{cases}$		$\begin{cases} x = 2 \\ y = -9 \end{cases}$	$\begin{cases} x = 6 \\ y = 4 \end{cases}$	$\begin{cases} x = 0 \\ y = -6 \end{cases}$	1
2	$\begin{cases} -6x - 5y = 57 \\ 2y = -18 \end{cases}$	$\begin{cases} 8x = 40 \\ 6x + 4y = 30 \end{cases}$	$\begin{cases} -9x = -9 \\ -4x - 2y = 10 \end{cases}$		$\begin{cases} x = -2 \\ y = -9 \end{cases}$	$\begin{cases} x = 5 \\ y = 0 \end{cases}$	$\begin{cases} x = 1 \\ y = -7 \end{cases}$	2
3	$\begin{cases} -7y = -14 \\ -4x + 2y = -28 \end{cases}$	$\begin{cases} 9x = -54 \\ -10x - 4y = 20 \end{cases}$	$\begin{cases} 7x = -56 \\ 5x - y = -39 \end{cases}$		$\begin{cases} x = 8 \\ y = 2 \end{cases}$	$\begin{cases} x = -6 \\ y = 10 \end{cases}$	$\begin{cases} x = -8 \\ y = -1 \end{cases}$	3
4	$\begin{cases} 4x - 9y = 59 \\ 9y = -63 \end{cases}$	$\begin{cases} -y = -3 \\ -4x + 6y = 18 \end{cases}$	$\begin{cases} 8y = 24 \\ -10x + 6y = -52 \end{cases}$		$\begin{cases} x = -1 \\ y = -7 \end{cases}$	$\begin{cases} x = 0 \\ y = 3 \end{cases}$	$\begin{cases} x = 7 \\ y = 3 \end{cases}$	4
5	$\begin{cases} 8x = 16 \\ -3x + 7y = -6 \end{cases}$	$\begin{cases} -8x - 4y = 80 \\ -3x = 21 \end{cases}$	$\begin{cases} -3x = 3 \\ -5x - 10y = -5 \end{cases}$		$\begin{cases} x = 2 \\ y = 0 \end{cases}$	$\begin{cases} x = -7 \\ y = -6 \end{cases}$	$\begin{cases} x = -1 \\ y = 1 \end{cases}$	5
6	$\begin{cases} 10x - y = 87 \\ 6x = 48 \end{cases}$	$\begin{cases} -5x + 5y = 15 \\ -2x = -6 \end{cases}$	$\begin{cases} -3x + 6y = -48 \\ 8y = -48 \end{cases}$		$\begin{cases} x = 8 \\ y = -7 \end{cases}$	$\begin{cases} x = 3 \\ y = 6 \end{cases}$	$\begin{cases} x = 4 \\ y = -6 \end{cases}$	6
7	$\begin{cases} -8x + 8y = 40 \\ 5y = 35 \end{cases}$	$\begin{cases} -y = 10 \\ 2x - 8y = 72 \end{cases}$	$\begin{cases} 6y = -42 \\ 9x - 2y = -13 \end{cases}$		$\begin{cases} x = 2 \\ y = 7 \end{cases}$	$\begin{cases} x = -4 \\ y = -10 \end{cases}$	$\begin{cases} x = -3 \\ y = -7 \end{cases}$	7
8	$\begin{cases} 2x = 4 \\ 5x - 6y = 40 \end{cases}$	$\begin{cases} 4x = -12 \\ 7x + 8y = 43 \end{cases}$	$\begin{cases} -7x - 3y = -76 \\ -8y = -72 \end{cases}$		$\begin{cases} x = 2 \\ y = -5 \end{cases}$	$\begin{cases} x = -3 \\ y = 8 \end{cases}$	$\begin{cases} x = 7 \\ y = 9 \end{cases}$	8
9	$\begin{cases} -2y = 14 \\ -10x + 7y = -109 \end{cases}$	$\begin{cases} -9x + 3y = -3 \\ 2x = 4 \end{cases}$	$\begin{cases} -x - 3y = 18 \\ 2y = -8 \end{cases}$		$\begin{cases} x = 6 \\ y = -7 \end{cases}$	$\begin{cases} x = 2 \\ y = 5 \end{cases}$	$\begin{cases} x = -6 \\ y = -4 \end{cases}$	9
10	$\begin{cases} 6x = 48 \\ 6x + 3y = 75 \end{cases}$	$\begin{cases} -9x = 36 \\ -10x - 9y = 22 \end{cases}$	$\begin{cases} 8y = -40 \\ 8x - 6y = -18 \end{cases}$		$\begin{cases} x = 8 \\ y = 9 \end{cases}$	$\begin{cases} x = -4 \\ y = 2 \end{cases}$	$\begin{cases} x = -6 \\ y = -5 \end{cases}$	10



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$\begin{cases} 3x + 6y = 27 \\ 2y = 8 \end{cases}$	$\begin{cases} 10x = -60 \\ -6x - 5y = 16 \end{cases}$	$\begin{cases} 7x - 4y = -4 \\ 5x = 0 \end{cases}$		$\begin{cases} x = 1 \\ y = 4 \end{cases}$	$\begin{cases} x = -6 \\ y = 4 \end{cases}$	$\begin{cases} x = 0 \\ y = 1 \end{cases}$	1
2	$\begin{cases} 2y = 2 \\ 3x + 8y = -4 \end{cases}$	$\begin{cases} -x + 9y = 53 \\ 8x = 8 \end{cases}$	$\begin{cases} -2x - 4y = -48 \\ -9y = -72 \end{cases}$		$\begin{cases} x = -4 \\ y = 1 \end{cases}$	$\begin{cases} x = 1 \\ y = 6 \end{cases}$	$\begin{cases} x = 8 \\ y = 8 \end{cases}$	2
3	$\begin{cases} -9x - 6y = -69 \\ 3x = 27 \end{cases}$	$\begin{cases} -10x - 9y = -107 \\ -7x = -56 \end{cases}$	$\begin{cases} -5y = -30 \\ -6x + 4y = 18 \end{cases}$		$\begin{cases} x = 9 \\ y = -2 \end{cases}$	$\begin{cases} x = 8 \\ y = 3 \end{cases}$	$\begin{cases} x = 1 \\ y = 6 \end{cases}$	3
4	$\begin{cases} -5x - 10y = 135 \\ 9x = -63 \end{cases}$	$\begin{cases} -x - 7y = -19 \\ -5y = -15 \end{cases}$	$\begin{cases} 9y = -36 \\ 9x + 2y = -44 \end{cases}$		$\begin{cases} x = -7 \\ y = -10 \end{cases}$	$\begin{cases} x = -2 \\ y = 3 \end{cases}$	$\begin{cases} x = -4 \\ y = -4 \end{cases}$	4
5	$\begin{cases} 4x - 4y = 0 \\ 2y = -6 \end{cases}$	$\begin{cases} -3x - 2y = -21 \\ 3x = 9 \end{cases}$	$\begin{cases} -5x = -20 \\ -9x - 9y = -36 \end{cases}$		$\begin{cases} x = -3 \\ y = -3 \end{cases}$	$\begin{cases} x = 3 \\ y = 6 \end{cases}$	$\begin{cases} x = 4 \\ y = 0 \end{cases}$	5
6	$\begin{cases} -2y = -6 \\ 6x - 5y = -39 \end{cases}$	$\begin{cases} 2x + 8y = -14 \\ -7x = -35 \end{cases}$	$\begin{cases} -6x + 6y = 12 \\ -7y = -7 \end{cases}$		$\begin{cases} x = -4 \\ y = 3 \end{cases}$	$\begin{cases} x = 5 \\ y = -3 \end{cases}$	$\begin{cases} x = -1 \\ y = 1 \end{cases}$	6
7	$\begin{cases} -2x = -12 \\ 2x - 9y = 30 \end{cases}$	$\begin{cases} -9y = 54 \\ -9x - 9y = 108 \end{cases}$	$\begin{cases} 2x + 5y = -10 \\ 2y = -12 \end{cases}$		$\begin{cases} x = 6 \\ y = -2 \end{cases}$	$\begin{cases} x = -6 \\ y = -6 \end{cases}$	$\begin{cases} x = 10 \\ y = -6 \end{cases}$	7
8	$\begin{cases} -4y = -28 \\ 7x + 2y = 0 \end{cases}$	$\begin{cases} -9y = 54 \\ -4x - 10y = 76 \end{cases}$	$\begin{cases} -7x = 56 \\ -9x + 4y = 44 \end{cases}$		$\begin{cases} x = -2 \\ y = 7 \end{cases}$	$\begin{cases} x = -4 \\ y = -6 \end{cases}$	$\begin{cases} x = -8 \\ y = -7 \end{cases}$	8
9	$\begin{cases} -5x = 5 \\ -4x + 7y = 67 \end{cases}$	$\begin{cases} -x - 8y = 57 \\ -10x = 90 \end{cases}$	$\begin{cases} 4x + 4y = 56 \\ 2y = 20 \end{cases}$		$\begin{cases} x = -1 \\ y = 9 \end{cases}$	$\begin{cases} x = -9 \\ y = -6 \end{cases}$	$\begin{cases} x = 4 \\ y = 10 \end{cases}$	9
10	$\begin{cases} 7y = -21 \\ 8x + 6y = 14 \end{cases}$	$\begin{cases} 7x = 28 \\ 3x - y = 9 \end{cases}$	$\begin{cases} -7x = 28 \\ 4x + 7y = -44 \end{cases}$		$\begin{cases} x = 4 \\ y = -3 \end{cases}$	$\begin{cases} x = 4 \\ y = 3 \end{cases}$	$\begin{cases} x = -4 \\ y = -4 \end{cases}$	10



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$\begin{cases} -8x - 7y = -86 \\ -6x + 8y = -38 \end{cases}$	$\begin{cases} -3x - 3y = -36 \\ x - 2y = 3 \end{cases}$	$\begin{cases} -3x - 5y = -33 \\ -x - 5y = -31 \end{cases}$		$\begin{matrix} x = 9 \\ y = 2 \end{matrix}$	$\begin{matrix} x = 9 \\ y = 3 \end{matrix}$	$\begin{matrix} x = 1 \\ y = 6 \end{matrix}$	1
2	$\begin{cases} 7x + 3y = -15 \\ 4x - 9y = -30 \end{cases}$	$\begin{cases} -4x - 2y = -36 \\ -x + y = 0 \end{cases}$	$\begin{cases} 3x + y = 32 \\ -x - 4y = -40 \end{cases}$		$\begin{matrix} x = -3 \\ y = 2 \end{matrix}$	$\begin{matrix} x = 6 \\ y = 6 \end{matrix}$	$\begin{matrix} x = 8 \\ y = 8 \end{matrix}$	2
3	$\begin{cases} -x + 4y = 20 \\ -2x - 8y = -40 \end{cases}$	$\begin{cases} -4x - 5y = -85 \\ x - 2y = -8 \end{cases}$	$\begin{cases} -x + 3y = -26 \\ -x + 2y = -19 \end{cases}$		$\begin{matrix} x = 0 \\ y = 5 \end{matrix}$	$\begin{matrix} x = 10 \\ y = 9 \end{matrix}$	$\begin{matrix} x = 5 \\ y = -7 \end{matrix}$	3
4	$\begin{cases} 9x + 4y = -15 \\ 3x - y = -12 \end{cases}$	$\begin{cases} x + 4y = -34 \\ -4x + 3y = -19 \end{cases}$	$\begin{cases} 4x + y = -25 \\ 2x - y = -17 \end{cases}$		$\begin{matrix} x = -3 \\ y = 3 \end{matrix}$	$\begin{matrix} x = -2 \\ y = -9 \end{matrix}$	$\begin{matrix} x = -7 \\ y = 3 \end{matrix}$	4
5	$\begin{cases} 6x - 9y = -87 \\ -5x - 9y = -10 \end{cases}$	$\begin{cases} -x - 5y = -54 \\ -4x + 4y = 24 \end{cases}$	$\begin{cases} x + 4y = -9 \\ 4x - y = -19 \end{cases}$		$\begin{matrix} x = -7 \\ y = 5 \end{matrix}$	$\begin{matrix} x = 4 \\ y = 10 \end{matrix}$	$\begin{matrix} x = -5 \\ y = -1 \end{matrix}$	5
6	$\begin{cases} 9x + 2y = 72 \\ -x + 4y = -46 \end{cases}$	$\begin{cases} -4x + y = -29 \\ -x - 3y = -30 \end{cases}$	$\begin{cases} -4x - 2y = -2 \\ 3x + y = 0 \end{cases}$		$\begin{matrix} x = 10 \\ y = -9 \end{matrix}$	$\begin{matrix} x = 9 \\ y = 7 \end{matrix}$	$\begin{matrix} x = -1 \\ y = 3 \end{matrix}$	6
7	$\begin{cases} -2x + 7y = -39 \\ -9x - 4y = 2 \end{cases}$	$\begin{cases} 2x - 4y = 0 \\ x - 2y = 0 \end{cases}$	$\begin{cases} -3x - 4y = 51 \\ -x - y = 15 \end{cases}$		$\begin{matrix} x = 2 \\ y = -5 \end{matrix}$	$\begin{matrix} x = 4 \\ y = 2 \end{matrix}$	$\begin{matrix} x = -9 \\ y = -6 \end{matrix}$	7
8	$\begin{cases} -x - 8y = -26 \\ 7x - 5y = -62 \end{cases}$	$\begin{cases} 2x - 4y = 34 \\ -x - 4y = 37 \end{cases}$	$\begin{cases} 2x - y = -2 \\ 3x + 2y = -3 \end{cases}$		$\begin{matrix} x = -6 \\ y = 4 \end{matrix}$	$\begin{matrix} x = -1 \\ y = -9 \end{matrix}$	$\begin{matrix} x = -1 \\ y = 0 \end{matrix}$	8
9	$\begin{cases} -9x - 7y = -65 \\ 9x + 10y = 89 \end{cases}$	$\begin{cases} 3x - y = 28 \\ 4x + 4y = -16 \end{cases}$	$\begin{cases} -x + 3y = -22 \\ -2x + 2y = -12 \end{cases}$		$\begin{matrix} x = 1 \\ y = 8 \end{matrix}$	$\begin{matrix} x = 6 \\ y = -10 \end{matrix}$	$\begin{matrix} x = -2 \\ y = -8 \end{matrix}$	9
10	$\begin{cases} 5x - 9y = 108 \\ -3x - 10y = 43 \end{cases}$	$\begin{cases} 2x - 4y = -10 \\ -5x + y = -29 \end{cases}$	$\begin{cases} 5x + 2y = -19 \\ 5x - y = 2 \end{cases}$		$\begin{matrix} x = 9 \\ y = -7 \end{matrix}$	$\begin{matrix} x = 7 \\ y = 6 \end{matrix}$	$\begin{matrix} x = -1 \\ y = -7 \end{matrix}$	10



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$\begin{cases} 10x = -60 \\ -6x - 5y = 16 \end{cases}$	$\begin{cases} -x - 4y = 24 \\ x - 4y = 24 \end{cases}$	$\begin{cases} -5x - 2y = -50 \\ -x - 2y = -26 \end{cases}$		$\begin{cases} x = -6 \\ y = 4 \end{cases}$	$\begin{cases} x = 0 \\ y = -6 \end{cases}$	$\begin{cases} x = 6 \\ y = 10 \end{cases}$	1
2	$\begin{cases} -x + 9y = 53 \\ 8x = 8 \end{cases}$	$\begin{cases} -x - y = -11 \\ -4x + 2y = -2 \end{cases}$	$\begin{cases} -5x + 4y = 29 \\ -x + 4y = 9 \end{cases}$		$\begin{cases} x = 1 \\ y = 6 \end{cases}$	$\begin{cases} x = 4 \\ y = 7 \end{cases}$	$\begin{cases} x = -5 \\ y = 1 \end{cases}$	2
3	$\begin{cases} -10x - 9y = -107 \\ -7x = -56 \end{cases}$	$\begin{cases} -x - y = 0 \\ 2x + 5y = 27 \end{cases}$	$\begin{cases} -4x - y = 24 \\ -3x - 2y = 8 \end{cases}$		$\begin{cases} x = 8 \\ y = 3 \end{cases}$	$\begin{cases} x = -9 \\ y = 9 \end{cases}$	$\begin{cases} x = -8 \\ y = 8 \end{cases}$	3
4	$\begin{cases} -x - 7y = -19 \\ -5y = -15 \end{cases}$	$\begin{cases} -x + y = 4 \\ 2x - 2y = -8 \end{cases}$	$\begin{cases} -2x - y = -14 \\ x + 2y = 1 \end{cases}$		$\begin{cases} x = -2 \\ y = 3 \end{cases}$	$\begin{cases} x = -3 \\ y = 1 \end{cases}$	$\begin{cases} x = 9 \\ y = -4 \end{cases}$	4
5	$\begin{cases} -3x - 2y = -21 \\ 3x = 9 \end{cases}$	$\begin{cases} 2x + 4y = 10 \\ x + 4y = 19 \end{cases}$	$\begin{cases} -3x - 3y = 3 \\ 3x - y = -23 \end{cases}$		$\begin{cases} x = 3 \\ y = 6 \end{cases}$	$\begin{cases} x = -9 \\ y = 7 \end{cases}$	$\begin{cases} x = -6 \\ y = 5 \end{cases}$	5
6	$\begin{cases} 2x + 8y = -14 \\ -7x = -35 \end{cases}$	$\begin{cases} 3x - 3y = 27 \\ -x - 3y = -1 \end{cases}$	$\begin{cases} -x - 5y = 24 \\ -3x - 5y = 12 \end{cases}$		$\begin{cases} x = 5 \\ y = -3 \end{cases}$	$\begin{cases} x = 7 \\ y = -2 \end{cases}$	$\begin{cases} x = 6 \\ y = -6 \end{cases}$	6
7	$\begin{cases} -9y = 54 \\ -9x - 9y = 108 \end{cases}$	$\begin{cases} -x - 2y = -13 \\ -5x - 4y = -23 \end{cases}$	$\begin{cases} -3x + 2y = -22 \\ x - 4y = 4 \end{cases}$		$\begin{cases} x = -6 \\ y = -6 \end{cases}$	$\begin{cases} x = -1 \\ y = 7 \end{cases}$	$\begin{cases} x = 8 \\ y = 1 \end{cases}$	7
8	$\begin{cases} -9y = 54 \\ -4x - 10y = 76 \end{cases}$	$\begin{cases} -x - 4y = -17 \\ 3x + 3y = 33 \end{cases}$	$\begin{cases} -x - 5y = -54 \\ 5x - 3y = -10 \end{cases}$		$\begin{cases} x = -4 \\ y = -6 \end{cases}$	$\begin{cases} x = 9 \\ y = 2 \end{cases}$	$\begin{cases} x = 4 \\ y = 10 \end{cases}$	8
9	$\begin{cases} -x - 8y = 57 \\ -10x = 90 \end{cases}$	$\begin{cases} 5x + y = -33 \\ -5x - y = 33 \end{cases}$	$\begin{cases} 2x - 3y = -6 \\ -5x + y = -11 \end{cases}$		$\begin{cases} x = -9 \\ y = -6 \end{cases}$	$\begin{cases} x = -7 \\ y = 2 \end{cases}$	$\begin{cases} x = 3 \\ y = 4 \end{cases}$	9
10	$\begin{cases} 7x = 28 \\ 3x - y = 9 \end{cases}$	$\begin{cases} -4x + 4y = 60 \\ -x + 3y = 29 \end{cases}$	$\begin{cases} -5x + 2y = -37 \\ x - 5y = 12 \end{cases}$		$\begin{cases} x = 4 \\ y = 3 \end{cases}$	$\begin{cases} x = -8 \\ y = 7 \end{cases}$	$\begin{cases} x = 7 \\ y = -1 \end{cases}$	10



	colonne 1	colonne 2	colonne 3		col1	col2	col3	
1	$\begin{cases} 6x - 7y = -88 \\ -10x + 7y = 128 \end{cases}$	$\begin{cases} -8x + 4y = 12 \\ 7x - 7y = 7 \end{cases}$	$\begin{cases} -3x + 5y = -7 \\ -7x + 5y = -3 \end{cases}$		$\begin{cases} x = -10 \\ y = 4 \end{cases}$	$\begin{cases} x = -4 \\ y = -5 \end{cases}$	$\begin{cases} x = -1 \\ y = -2 \end{cases}$	1
2	$\begin{cases} -9x + 10y = -58 \\ -3x - 4y = 10 \end{cases}$	$\begin{cases} 7x - y = 47 \\ 3x + 4y = 29 \end{cases}$	$\begin{cases} 3x - 3y = 9 \\ -6x + 6y = -18 \end{cases}$		$\begin{cases} x = 2 \\ y = -4 \end{cases}$	$\begin{cases} x = 7 \\ y = 2 \end{cases}$	$\begin{cases} x = 2 \\ y = -1 \end{cases}$	2
3	$\begin{cases} -10x - 6y = -58 \\ -4x - 8y = -68 \end{cases}$	$\begin{cases} -x + 2y = 24 \\ -9x + 3y = 96 \end{cases}$	$\begin{cases} -9x - 8y = 37 \\ 5x - 3y = 39 \end{cases}$		$\begin{cases} x = 1 \\ y = 8 \end{cases}$	$\begin{cases} x = -8 \\ y = 8 \end{cases}$	$\begin{cases} x = 3 \\ y = -8 \end{cases}$	3
4	$\begin{cases} 4x + 9y = -40 \\ -8x - 5y = 28 \end{cases}$	$\begin{cases} -9x - 5y = -61 \\ 7x + 4y = 47 \end{cases}$	$\begin{cases} 5x + 8y = 46 \\ -8x - 4y = -56 \end{cases}$		$\begin{cases} x = -1 \\ y = -4 \end{cases}$	$\begin{cases} x = 9 \\ y = -4 \end{cases}$	$\begin{cases} x = 6 \\ y = 2 \end{cases}$	4
5	$\begin{cases} -4x - 9y = 90 \\ 2x + 2y = -30 \end{cases}$	$\begin{cases} 5x + 4y = -40 \\ -4x + 5y = -50 \end{cases}$	$\begin{cases} 9x + 3y = 48 \\ 6x + 2y = 32 \end{cases}$		$\begin{cases} x = -9 \\ y = -6 \end{cases}$	$\begin{cases} x = 0 \\ y = -10 \end{cases}$	$\begin{cases} x = 4 \\ y = 4 \end{cases}$	5
6	$\begin{cases} -8x - 7y = 46 \\ -x - 2y = 8 \end{cases}$	$\begin{cases} -8x + 6y = 80 \\ -7x + 2y = 57 \end{cases}$	$\begin{cases} -5x + 5y = 50 \\ -8x - 9y = 29 \end{cases}$		$\begin{cases} x = -4 \\ y = -2 \end{cases}$	$\begin{cases} x = -7 \\ y = 4 \end{cases}$	$\begin{cases} x = -7 \\ y = 3 \end{cases}$	6
7	$\begin{cases} -x + 4y = 7 \\ 9x + 7y = 23 \end{cases}$	$\begin{cases} 8x + 7y = -4 \\ -x + 9y = -39 \end{cases}$	$\begin{cases} -x + 5y = 4 \\ 5x + 2y = -20 \end{cases}$		$\begin{cases} x = 1 \\ y = 2 \end{cases}$	$\begin{cases} x = 3 \\ y = -4 \end{cases}$	$\begin{cases} x = -4 \\ y = 0 \end{cases}$	7
8	$\begin{cases} -10x + 2y = -48 \\ -10x + 6y = -44 \end{cases}$	$\begin{cases} -9x + 3y = -54 \\ 2x + 3y = 23 \end{cases}$	$\begin{cases} -x - 2y = -22 \\ -7x + 5y = -2 \end{cases}$		$\begin{cases} x = 5 \\ y = 1 \end{cases}$	$\begin{cases} x = 7 \\ y = 3 \end{cases}$	$\begin{cases} x = 6 \\ y = 8 \end{cases}$	8
9	$\begin{cases} -3x - y = -21 \\ -x - 5y = -21 \end{cases}$	$\begin{cases} -5x - 6y = 51 \\ 3x - 8y = -19 \end{cases}$	$\begin{cases} 10x - 9y = 108 \\ 7x + 9y = 45 \end{cases}$		$\begin{cases} x = 6 \\ y = 3 \end{cases}$	$\begin{cases} x = -9 \\ y = -1 \end{cases}$	$\begin{cases} x = 9 \\ y = -2 \end{cases}$	9
10	$\begin{cases} -x - 6y = -35 \\ -4x - y = 21 \end{cases}$	$\begin{cases} -3x - 3y = 27 \\ -6x - 5y = 48 \end{cases}$	$\begin{cases} -4x - 6y = 0 \\ 5x + 9y = -9 \end{cases}$		$\begin{cases} x = -7 \\ y = 7 \end{cases}$	$\begin{cases} x = -3 \\ y = -6 \end{cases}$	$\begin{cases} x = 9 \\ y = -6 \end{cases}$	10