Équations

ex 23.1

$$-12 \quad \begin{cases} x + 12 = 7 \\ x = -5 \end{cases} \quad -12$$

$$-9 \quad \begin{cases} 9 + x = 15 \\ x = 6 \end{cases} \quad -9$$

$$-3{,}2 \quad \begin{cases} 3{,}2 + x = 6 \\ x = 2{,}8 \end{cases} \quad -3{,}2$$

$$x - (-3) = 8$$

$$-3 \quad \begin{cases} x + 3 = 8 \\ x = 5 \end{cases} \quad -3$$

ex 23.2

$$\div 2 \quad \begin{cases} 2x = 11 \\ x = \frac{11}{2} \\ x = 5{,}5 \end{cases} \quad \div 2$$

$$\div -4 \quad \begin{cases} -4x = 13 \\ x = \frac{13}{-4} \\ x = -3{,}25 \end{cases} \quad \div -4$$

$$\times 9 \quad \begin{cases} \frac{x}{9} = 5 \\ x = 45 \end{cases} \quad \times 9$$

$$\times 12 \quad \begin{cases} \frac{x}{12} = -7 \\ x = -84 \end{cases} \quad \times 12$$

$$\left.\begin{aligned} -\frac{6}{x} &= \frac{8}{1} \\ x \times 8 &= -6 \times 1 \end{aligned}\right\} \text{(pdt en croix)}$$

$$\div 8 \quad \begin{cases} 8x = -6 \\ x = -\frac{6}{8} \\ x = -\frac{3}{4} \end{cases} \quad \div 8$$

ex 23.3

$2x + 8 = 7$ $\quad -8$

$2x = -1$ $\quad -8$

$\div 2$ $\quad x = -\frac{1}{2}$

$4 - 8x = 15$

$4 + (-8x) = 15$ $\quad -4$

$-8x = 11$ $\quad -4$

$\div -8$ $\quad x = -\frac{11}{8}$ $\quad \div -8$

$5x + 11 = 3x + 5$ $\quad -11$

$5x = 3x + (-6)$ $\quad -11$

$-3x$ $\quad 2x = -6.$ $\quad -3x$

$\div 2$ $\quad x = -\frac{6}{2}$ $\quad \div 2$

$x = -3$

$4x + (-3) = -2x + 8$ $\quad +3$

$4x = -2x + 11$ $\quad +3$

$+2x$ $\quad 6x = 11$ $\quad +2x$

$x = \frac{11}{2}$

$x = 5{,}5$

ex 23.4

$(x+1)(x+2) = 0.$

$x+1 = 0$ ou $x+2 = 0.$

$x = -1$ ou $x = -2$

$S = \{-2 ; -1\}$

$2x(3-x) = 0.$

$2x = 0$ ou $(3-x) = 0$

$x = 0$ ou $x = 3$

$S = \{0 ; 3\}$

$(2x+7)(-x+8) = 0.$

$2x+7 = 0$ ou $-x+8 = 0.$

$2x = -7$ ou $x = 8$

$x = \frac{-7}{2}$

$x = -3{,}5$

$S = \{-3{,}5 ; 8\}$

$x(2x-7) = 0.$

$x = 0$ ou $2x-7 = 0$

$2x = 7$

$x = \frac{7}{2}$

$x = 3{,}5$

$S = \{0 ; 3{,}5\}$

ex 23.5

$x(x+1) - 3(x+1) = 0$

$(x+1)(x-3) = 0$ FACTORISER

$x+1 = 0$ ou $x-3 = 0.$

$x = -1$ ou $x = 3$

$S = \{-1 ; 3\}$

$5x(-1-x) + 5x(-2-x) = 0.$

$5x(-1-x + (-2) + (-x)) = 0.$

$5x(-3 + (-2x)) = 0.$

$5x = 0$ ou $-3 - 2x = 0.$

$\underline{x = 0}$ ou $-2x = 3.$

$x = -\frac{3}{2}$

$\underline{x = -1{,}5}$

$S = \{-1{,}5 ; 0\}$

ex 23.6.

$x^2 = 16.$

$x^2 - 16 = 0.$

FACTORISER $(x-4)(x+4) = 0$

$x = 4$ ou $x = -4$

$S = \{-4 ; 4\}$

$x^2 = 1$

$(x-1)(x+1) = 0$

$x = 1$ ou $x = -1$

$S = \{-1 ; 1\}$

$x^2 - 49 = 0.$

$(x-7)(x+7) = 0.$

$x - 7 = 0$ ou $x + 7 = 0.$

$x = 7$ ou $x = -7$

$S = \{-7 ; 7\}$

$x^2 = 20.$

$x^2 - 20 = 0$

$(x - \sqrt{20})(x + \sqrt{20}) = 0$

$x - \sqrt{20} = 0$ ou

$x + \sqrt{20} = 0$

$S = \{-\sqrt{20} ; \sqrt{20}\}$