

Second degré

• Equations

Résoudre dans $\mathbb{R}$ les équations suivantes.

1) $x^2 - 7x + 6 = 0$

$$\Delta = 49 - 24$$

$$= 25 > 0$$

$$x_1 = 1$$

$$x_2 = 6$$

$$2) -3x^2 + 2x + 5 = 0$$

$$\Delta = b^2 - 4ac$$

$$= 2^2 - 4 \times -3 \times 5$$

$$= 4 + 12 \times 5$$

$$= 4 + 60$$

$$= 64 > 0$$

$$x_1 = \frac{-b - \sqrt{\Delta}}{2a} = \frac{-2 - 8}{2 \times -3}$$

$$= \frac{-10}{-6} = \frac{5}{3}$$

$$x_2 = -\frac{5}{3}$$

$$\bullet x^2 + 3x - 10 = 0$$

$$\Delta = 49 > 0$$

$$x_1 = -5$$

$$x_2 = \frac{4}{2} = 2$$

$$\bullet x^2 + x - 6 = 0$$

$$\Delta = 1 + 24$$

$$= 25 > 0$$

$$x_1 = \frac{-1-5}{2} = -\frac{6}{2} = -3$$

$$x_2 = 2$$

$$\bullet \quad x^2 + 5x + 4 = 0$$

$$\Delta = 9 > 0$$

$$x_1 = \frac{-5-3}{2} = -\frac{8}{2} = -4$$

$$x_2 = -1$$

$$\bullet \quad x^2 - 8x + 15 = 0$$

$$\Delta = 64 - 60 = 4 > 0$$

$$x_1 = 3 \qquad x_2 = 5$$

$$\bullet \quad 2x^2 + 12x + 18 = 0.$$

$$\Delta = 0$$

$$x_0 = \frac{-b}{2a} = \frac{-12}{2 \times 2} = -3$$

• Forme Canonique

$$\rightarrow -x^2 + 2x + 3.$$

$$\alpha = \frac{-2}{2 \times -1} = 1$$

$$\begin{aligned} \beta &= f(1) = -(1^2) + 2 \times 1 + 3 \\ &= -1 + 2 + 3 = 4 \end{aligned}$$

done :

$$f(x) = -(x-1)^2 + 4$$

$$\beta = \frac{-b^2 + 4ac}{4a} = \frac{-\Delta}{4a}$$

$$= \frac{-(2^2) + 4 \times -1 \times 3}{4 \times -1}$$

$$= \frac{-4 + (-12)}{4 \times -1}$$

$$= \frac{-16}{-4} = 4.$$