

Q1

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

$$f(x) = 0 \Leftrightarrow -x^2 + x + 2 = 0$$

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

$$\Delta = 1^2 - 4(-1)(2) = 1 + 8 = 9$$

$$f(x) = a(x - x_1)(x - x_2)$$

$$x_1 = \frac{-b - \sqrt{\Delta}}{2a} = \frac{-1 - 3}{2 \times (-1)} = \frac{-4}{-2} = 2$$

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

$$x_2 = \frac{-b + \sqrt{\Delta}}{2a} = \frac{-1 + 3}{2 \times (-1)} = \frac{2}{-2} = -1$$

$$\text{Q2 } f(x) = 5(x+1)(x-3)$$

$$f(x) = 0 \Leftrightarrow x+1 = 0 \quad \text{ou} \quad x-3 = 0$$
$$x = -1 \qquad \qquad \qquad x = 3$$

Q3

$$x_1 \times x_2 = \frac{c}{a} = -10 \rightarrow c = -10a$$

$$x_1 + x_2 = \frac{-b}{a} = 3 \rightarrow b = -3a$$

Q 4

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

$$f(x) = 0 \Leftrightarrow x^2 + 2x + 1 = 0$$

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

$$\Delta = 2^2 - 4 \times 1 \times 1 = 0$$

$$x_0 = \frac{-b}{2a} = \frac{-2}{2 \times 1} = -1$$

$$f(x) = a(x - x_0)^2$$

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

Q 5

$$f(x) = ax^2 + bx + c$$

x_1 et x_2

$$f(x) = a(x - x_1)(x - x_2)$$

x_3 solution de $f(x) = 0$

$$f(x) = (x - x_3)(ax + d)$$

$$a(x - x_2)$$

$$ax - ax_2 + d$$

1^{er} degré 1^{er} degré
2^{ème} degré

Q 6

$$3x^2 - 2x - 1 = 0$$

$$3(-1)^2 - 2(-1) - 1 = 0$$

1 solution évidente

$$f(x) = (x - x_0)(ax + d)$$

$$(x - 1)(3x + d)$$

$$\begin{aligned} -1 \times d &= -1 \\ d &= \frac{-1}{-1} = 1 \end{aligned}$$

$$3x^2 + dx - 3x - d$$

$$3x^2 - 2x - 1$$

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

Q6

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

$$3x^2 - 2x - 1 = 0 \Leftrightarrow (x-1)(3x+1) = 0$$

$$\Leftrightarrow \begin{array}{l} x-1=0 \text{ ou } 3x+1=0 \\ x=1 \qquad \qquad x=-\frac{1}{3} \end{array}$$