

Concettion du devoi n°1 - Jéré spé

Ex 1: 1) $f(x) = 3x^2 - 24x + 50$ sur \mathbb{R}

$\alpha = \frac{-b}{2a} = \frac{24}{6} = 4$ $\beta = f(4) = 3 \times 16 - 24 \times 4 + 50$
 $= 48 - 96 + 50 = 2$

1 Donc $f(x) = 3(x-4)^2 + 2$

$f(x) = a(x-\alpha)^2 + \beta$

2) $h(x) = -x^2 - 8x - 23$ sur \mathbb{R}

$a = -1$ $b = -8$ $c = -23$

1 $\alpha = \frac{8}{-2} = -4$ $\beta = f(-4) = -(-4)^2 - 8 \times (-4) - 23$
 $= -16 + 32 - 23 = -7$

donc $h(x) = -(x+4)^2 - 7$

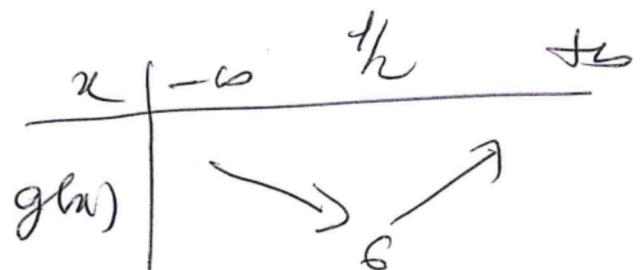
3) $g(x) = x^2 - x + \frac{25}{4}$ sur \mathbb{R}

$\frac{1}{4}$

1 $\alpha = \frac{1}{2}$ $\beta = g\left(\frac{1}{2}\right) = \left(\frac{1}{2}\right)^2 - \frac{1}{2} + \frac{25}{4}$
 $= \frac{1}{4} - \frac{2}{4} + \frac{25}{4} = \frac{24}{4} = 6$

Donc $g(x) = \left(x - \frac{1}{2}\right)^2 + 6$

de plus $a=1$; $a > 0$ donc



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Ex2: $g(x) = x^2 - x - 2 \quad \text{sur } \mathbb{R}$

$$a=1 \quad b=-1 \quad c=-2$$

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

$$\sqrt{\Delta} = \sqrt{9} = 3$$

$$x_1 = \frac{1+3}{2} = 2 \quad \text{et} \quad x_2 = \frac{1-3}{2} = -1$$

$$\underline{g(x) = (x-2)(x+1)}$$

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

Ex3: 1) $P(x) = a(x-\alpha)^2 + \beta \quad \text{sur } \mathbb{R}$

$S(3;6)$ est le sommet de la parabole

donc $\alpha=3$ et $\beta=6$

alors $P(x) = a(x-3)^2 + 6$

or $A(0;24)$ est sur la parabole

donc $P(0) = 24 \Leftrightarrow a(-3)^2 + 6 = 24$

$$\Leftrightarrow 9a = 18 \Leftrightarrow a = 2$$

on a $\underline{P(x) = 2(x-3)^2 + 6}$

2) $\underline{P(x) = 2(x^2 - 6x + 9) + 6 = 2x^2 - 12x + 24}$