

Contrôle du 22 avril

Exercice 1

a) On a les étapes :

$$> 1$$

$$> 1 - 3 = -2$$

$$> (-2) \times 1 = -2$$

$$> (-2) + 2 = \underline{0}$$

b) On a les étapes :

$$> x$$

$$> x - 3$$

$$> (x - 3)x$$

$$> \underline{(x - 3)x + 2}$$

c) $h(3) = (3 - 3) \times 3 + 2 = 0 \times 3 + 2 = 0 + 2 = 2.$

$$h(-4) = (-4 - 3) \times (-4) + 2 = (-7) \times (-4) + 2 = 28 + 2 = 30.$$

$$h\left(\frac{1}{3}\right) = \left(\frac{1}{3} - 3\right) \times \frac{1}{3} + 2 = \left(\frac{1}{3} - \frac{9}{3}\right) \times \frac{1}{3} + 2 = \left(\frac{1}{3} - \frac{8}{3}\right) \times \frac{1}{3} + 2$$

$$\text{Donc } h\left(\frac{1}{3}\right) = -\frac{8}{3} \times \frac{1}{3} + 2 = -\frac{8}{9} + 2 = -\frac{8}{9} + \frac{18}{9} = -\frac{8}{9} + \frac{18}{9} = \frac{10}{9}.$$

et, d'après la question a), 0 admet 1 comme antécédent.

x	3	-4	$\frac{1}{3}$	1
$h(x)$	2	30	$10\frac{1}{9}$	0

d) $(x - 3)x + 2 = x \cdot x - 3x + 2 = \underline{x^2 - 3x + 2}$

Exercice 2

a) $(2x - 3y)(4x - 2) = 2x \cdot 4x + 2x \cdot (-2) + (-3y) \cdot x + (-3y) \cdot (-2)$
 $= \underline{8x^2 - 4x - 12xy + 6y}$

b) $(2a + 3b)(-4a + 6b) = 2a \cdot (-4a) + 2a \cdot 6b + 3b \cdot (-4a) + 3b \cdot 6b$
 $= -8a^2 + 12ab - 12ab + 18b^2$
 $= \underline{18b^2 - 8a^2}$

$$\begin{aligned}
 c) (2a+5b)^2 + (3a+b)^2 &= [(2a)^2 + 2(2a)(5b) + (5b)^2] + [(3a)^2 + 2a \cdot b + b^2] \\
 &= [4a^2 + 20ab + 25b^2] + [9a^2 + 6ab + b^2] \\
 &= 4a^2 + 9a^2 + 20ab + 6ab + 25b^2 + b^2 \\
 &= 13a^2 + 26ab + 26b^2.
 \end{aligned}$$

$$\begin{aligned}
 d) (2a+5b)(3a-2b) - (2a-1)(3a+2b) - (a-2b)(5b-1) \\
 &= [2a \cdot 3a + 2a \cdot (-2b) + 5b \cdot 3a + 5b \cdot (-2b)] \\
 &\quad - [2a \cdot 3a + 2a \cdot 2b + (-1)3a + (-1)2b] \\
 &\quad - [a \cdot 5b + a \cdot (-1) + (-2b)5b + (-2b)(-1)] \\
 &= [6a^2 - 4ab + 15ab - 10b^2] \\
 &\quad - [6a^2 + 4ab - 3a - 2b] \\
 &\quad - [5ab - a - 10b^2 + 2b] \\
 &= 6a^2 + 11ab - 10b^2 - 6a^2 - 4ab + 3a + 2b - 5ab + a + 10b^2 - 2b \\
 &= 6a^2 - 6a^2 + 11ab - 4ab - 5ab - 10b^2 + 10b^2 + 3a + a + 2b - 2b \\
 &= 0 \cdot a^2 + (11-4-5)ab + 0b^2 + 4a + 0b \\
 &= 2ab + 4a
 \end{aligned}$$

Exercice 3

$$\begin{aligned}
 a) (2x+1)(3x-4) + (2x+1)(7x+4) \\
 &= (2x+1)(3x-4 + 7x+4) \\
 &= (2x+1) \cdot 10x
 \end{aligned}$$

$$\begin{aligned}
 b) x(x+1) + (x-2)x &= x(x+1+x-2) \\
 &= x(2x-1)
 \end{aligned}$$

$$\begin{aligned}
 c) (x+1)(x+3) - (x+1)(2x+2) &= (x+1)[x+3 - (2x+2)] \\
 &= (x+1)(x+3 - 2x - 2) \\
 &= (x+1)(-x+1)
 \end{aligned}$$

$$\begin{aligned}
 d) (x+1)^2 - 4 &= (x+1)^2 - 2^2 = [(x+1) + 2][(x+1) - 2] \\
 &= (x+1+2)(x+1-2) \\
 &= (x+3)(x-1).
 \end{aligned}$$