

Exercice (1):

$$\begin{aligned}
 A &= (x+8)(x-1) + 9(5-x) \\
 &= x^2 - x + 8x - 8 + \frac{9 \times 5}{45} - 9x \\
 &= x^2 - 2x + 37
 \end{aligned}$$

$$\begin{aligned}
 B &= (7x-4) - (4x+9) + (4x-9) \\
 &= 7x-4-4x-9+4x-9 \\
 &= 7x-22
 \end{aligned}$$

$$\begin{aligned}
 C &= -3x+6 + (-5x-2)(8x-9) \\
 &= -3x+6 - 40x^2 + 45x - 16x + 18 \\
 &= -40x^2 + 26x + 24
 \end{aligned}$$

$$\begin{aligned}
 D &= -3 - (1-2x) - 3(-3x+1) \\
 &= -3-1+2x+9x-3 \\
 &= 11x-7
 \end{aligned}$$

$$\begin{aligned}
 E &= x(3x+4) - (2x-4)(-x+5) \\
 &= 3x^2+4x - (-2x^2+10x+4x-20) \\
 &= 3x^2+4x+2x^2-10x-4x+20 \\
 &= 5x^2-10x+20
 \end{aligned}$$

$$\begin{aligned}
 F &= (x-5)^2 \\
 &= x^2+25-2 \times x \times 5 \\
 &= x^2-10x+25
 \end{aligned}$$

$$\begin{aligned}
 G &= (4x+3)(4x-3) \\
 &= (4x)^2 - 3^2 \\
 &= 16x^2 - 9
 \end{aligned}$$

$$\begin{aligned}
 H &= (8x+3)^2 \\
 &= (8x)^2 + 3^2 + 2 \times 8x \times 3 \\
 &= 64x^2 + 48x + 9
 \end{aligned}$$

$$\begin{aligned}
 I &= (x+9)(x-9) + (8x+2)^2 \\
 &= x^2 - 9^2 + (8x)^2 + 2 \times 8x \times 2 + 2^2 \\
 &= x^2 - 81 + 64x^2 + 32x + 4 \\
 &= 65x^2 + 32x - 77
 \end{aligned}$$

$$\begin{aligned}
 J &= (x+2)^2 - (x+3)^2 \\
 &= x^2+4+2x \times 2 - (x^2+9+2x \times 3) \\
 &= x^2+4+4x-x^2-9-6x \\
 &= 8x+40
 \end{aligned}$$

Exercice (2):

$$\begin{aligned}
 K &= xy^2 - 3xy + 4x^2y \\
 &= xy(y-3+4x)
 \end{aligned}$$

$$\begin{aligned}
 L &= 9x - 36 \\
 &= 9(x-4)
 \end{aligned}$$

$$\begin{aligned}
 M &= x^2 - x \\
 &= x(x-1)
 \end{aligned}$$

$$\begin{aligned}
 N &= x^2 - 49 \\
 &= (x+7)(x-7)
 \end{aligned}$$

$$\begin{aligned}
 O &= (x+1)(y+16) + (2y+3)(x+1) \\
 &= (x+1)(y+16+2y+3) \\
 &= (x+1)(3y+19)
 \end{aligned}$$

$$\begin{aligned}
 P &= x^2 - 18x + 81 \\
 &= (x-9)^2
 \end{aligned}$$

$$\begin{aligned}
 Q &= (3x-2)(x+3) - (3x-5)(x+3) \\
 &= (x+3)(3x-2-(3x-5)) \\
 &= (x+3)(-2+5) \\
 &= 3(x+3)
 \end{aligned}$$

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

$$\begin{aligned}
 S &= (5x-6)(3x+2) - (5x-6)^2 \\
 &= (5x-6)(3x+2-(5x-6)) \\
 &= (5x-6)(-2x+8)
 \end{aligned}$$

$$\begin{aligned}
 T &= (4x+1)^2 - (6x-5)^2 \\
 &= (4x+1+6x-5)(4x+1-(6x-5)) \\
 &= (10x-4)(-2x+6)
 \end{aligned}$$

on utilise $a^2 - b^2 = (a+b)(a-b)$.