

Mathématique

Contrôle 20/01/2023

Exercice 1:

$$0,3 \times 0,6 = 0,18 = 18\%$$

Exercice 2:

$$\left(1 - \frac{10}{100}\right) \times \left(1 + \frac{30}{100}\right) \times \left(1 + \frac{20}{100}\right) - 1 = 0,404 = 40,4\%$$

Exercice 3:

$$u_1 = 3 \times 5 - 2 = 13$$

$$u_2 = 3 \times 13 - 2 = 37$$

$$u_3 = 5 \times 37 - 2 = 109$$

Exercice 4:

$$1. f(x) = 2 \times 3x^2 - 3 \times 2x - 12$$

$$f'(x) = 6x^2 - 6x - 12$$

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

$$6(x+1)(x-2) = 6x^2 - 6x - 12$$

$$\text{Donc } f(x) = 6(x+1)(x-2)$$

$$2. f'(x) = 0$$

$$\begin{array}{l|l} x+1=0 & x-2=0 \\ x=-1 & x=2 \end{array}$$

3.

x	-4	-1	2	5
f	+	+	+	
$x+1$	-	+	+	
$x+2$	-	-	+	
$f'(x)$	+	+	+	

x	-4	-1	2	5
$f(x)$	+	+	+	7
$f(x)$	-125	\nearrow^{12} -15	\nearrow^{126}	

Exercice 5:

$$1. 21 + 30 + 31 = 82 \text{ jours}$$

$$2. t_{\text{m}} = \left(1 + \frac{15}{100}\right)^{\frac{1}{365}} - 1 \approx 0,04\%$$

$$3. 400\,000 \times \left(1 + \frac{0,4}{100}\right)^{82} \approx 413\,335$$