

DERIVATION

Exo 1

1) $f(2) = -1$ (Aide $f(x) = y$)
↑ abscisse ↑ ordonnée ↑ abscisse ↑ ordonnée

$$f(-1) = 1$$

$$f(0) = 2$$

2) $f'(0) \Rightarrow$ calcul du coefficient directeur k de la tangente en $x = 0$

$$k = \frac{y_B - y_A}{x_B - x_A} \quad A \begin{cases} x_A = -1 \\ y_A = 2 \end{cases} \quad B \begin{cases} x_B = 1 \\ y_B = 2 \end{cases}$$

$$k = \frac{2 - 2}{1 - (-1)} = 0$$

$$f'(0) = 0$$

$f'(-1) \Rightarrow$ coeff. directeur k de la tangente en $x = -1$

$$k = \frac{y_B - y_A}{x_B - x_A} \quad A \begin{cases} x_A = -2 \\ y_A = -1 \end{cases} \quad B \begin{cases} x_B = 0 \\ y_B = 3 \end{cases}$$

$$k = \frac{3 - (-1)}{0 - (-2)} = \frac{3 + 1}{+2} = \frac{4}{2} = 2$$

$$f'(-1) = 2$$

$f'(2) \Rightarrow$ coeff. directeur de la tangente en $x=2$

$$k = \frac{y_B - y_A}{x_B - x_A}$$

$$A \begin{cases} x_A = 0 \\ y_A = 0 \end{cases}$$

$$B \begin{cases} x_B = 4 \\ y_B = -2 \end{cases}$$

$$k = \frac{-2 - 0}{4 - 0} = \frac{-2}{4} = -0,5$$

$$f'(2) = -0,5$$

Exo 2

1) $f(x) = 6$ $f'(x) = 0$

2) $f(x) = 6x$ $f'(x) = 6$

3) $f(x) = 6x + 6$ $f'(x) = 6$

4) $f(x) = 3x^2$ $f'(x) = 3 \times 2x = 6x$

5) $f(x) = \frac{1}{2}x^2 + 10x + 3$

$$f'(x) = 2 \times \frac{1}{2}x + 10 = x + 10$$

6) $f(x) = -\frac{1}{2}gx^2 + v_0 \sin \alpha x + k$

$$f'(x) = -2 \times \frac{1}{2}gx + v_0 \sin \alpha$$

$$f'(x) = -gx + v_0 \sin \alpha$$