

Ex1 a) $g'(x) = -\frac{1}{2} \sqrt{1 + \ln(x)}$

b) $g'(t) = \frac{2 - \sqrt{t}}{2(\sqrt{t} - 1)^2}$

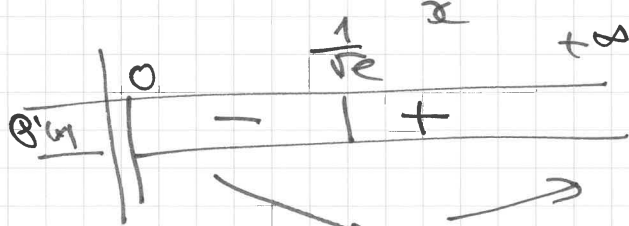
c) $h'(x) = e^x (1 + x)$

Ex3 a, $D(b) =]0, +\infty[$

b) $f'(x) = 4 \frac{1 + 2 \ln(x)}{x}$

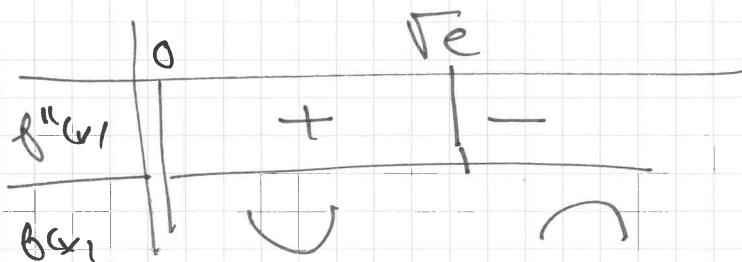
$1 + 2 \ln(x) = 0$

$\ln(x) = -\frac{1}{2} \quad x = e^{-\frac{1}{2}}$



c) $f''(x) = \frac{8 - 4}{x^2} = 4 \left(\frac{1 - 2 \ln(x)}{x^2} \right)$

$1 - 2 \ln(x) = 0 \quad x = e^{\frac{1}{2}}$



en $x = \sqrt{e}$ on a un pt d'inflexion

EX4

a) von Connection TE2-MAT1-B

EX4 b)

$$b) \lim_{x \rightarrow 0} \frac{1 - \cos(3x)}{G^2(2x) - 1} = \frac{0}{0}$$

$$\lim_{x \rightarrow 0} \frac{3 \sin(3x)}{-2 \cos(2x) \cdot 2 \sin(2x)} = \lim_{x \rightarrow 0} \frac{9 \frac{\sin(3x)}{3x} \cdot 3x}{-2 \cos(2x) \cdot \frac{2 \sin(2x)}{2x} \cdot 2x} = -\frac{9}{8}$$

c) von Connection TE2-MAT1-B EX4 c)

EX2 a)

$$f(x) = e^{-2x}$$

$$f'(x) = -2e^{-2x}$$

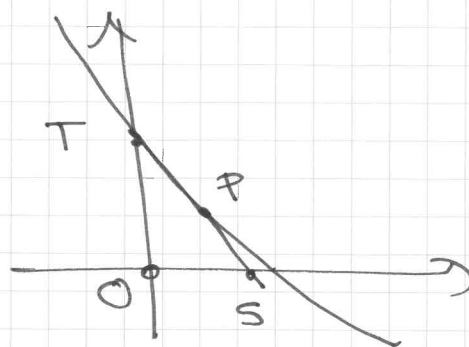
$$\begin{aligned} a) \quad y &= -2e^{-2x_0}(x - x_0) + e^{-2x_0} \\ &= e^{-2x_0}(-2x + 2x_0 + 1) \\ &= e^{-2x_0}(1 - 2(x - x_0)) \end{aligned}$$

S: $y=0$ dans l'éq de la tangente

$$\cancel{1-2} \quad 2x_0 + 1 = 2x$$

$$x = \frac{2x_0 + 1}{2}$$

$$S\left(\frac{2x_0 + 1}{2}, 0\right)$$

T: $x=0$ dans l'éq de la tangente

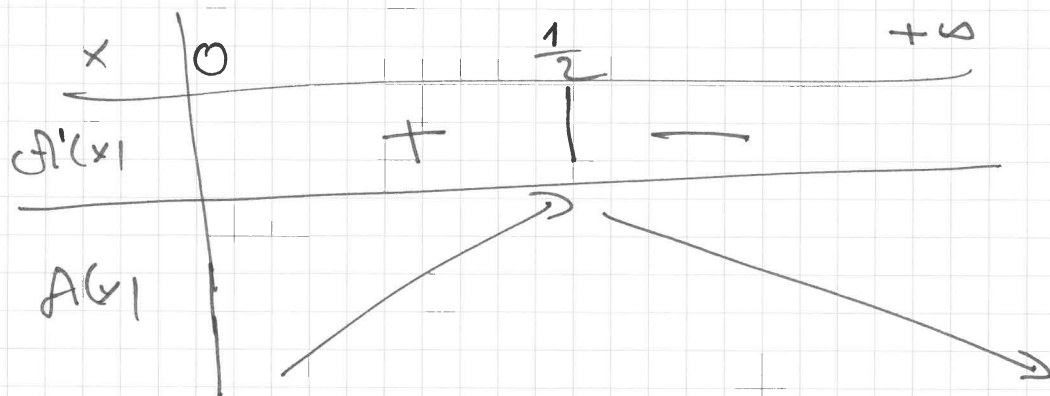
$$y = e^{-2x_0}(1 + 2x_0)$$

$$T(0, e^{-2x_0}(1 + 2x_0))$$

aire du triangle OST

$$A = \frac{1}{2} \left(\frac{2x+1}{2} \right)^2 e^{-2x} \quad x > 0$$

$$A'(x) = \frac{1}{2} (2x+1) e^{-2x} (1-2x)$$



en $x = \frac{1}{2}$ on a un max de surface

$$P\left(\frac{1}{2}; e^{-1}\right) = P\left(\frac{1}{2}, \frac{1}{e}\right)$$