

TE Dérivées (5 février 2025)

CRM 30

17 }
18 } p. 104

MATHÉMATIQUES II

2.7.17 p. 45

2.7.18 p. 46

+ 2 exos suppl. en ligne

19 }
20 } p. 105
21 }

+ Dessiner $\cos x$ et $\sin x$

sur $[0; 2\pi]$

31 à 33 pp. 107/108

$$f(x) = (x+1)(x-1)$$

$$= x^2 - x + x - 1$$

$$= x^2 - 1$$

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

$$= 2x - 0$$

$$= 2x$$

$$\left(\frac{f(x)}{g(x)} \right)' = \frac{f'(x) \cdot g(x) - f(x) \cdot g'(x)}{g^2(x)}$$

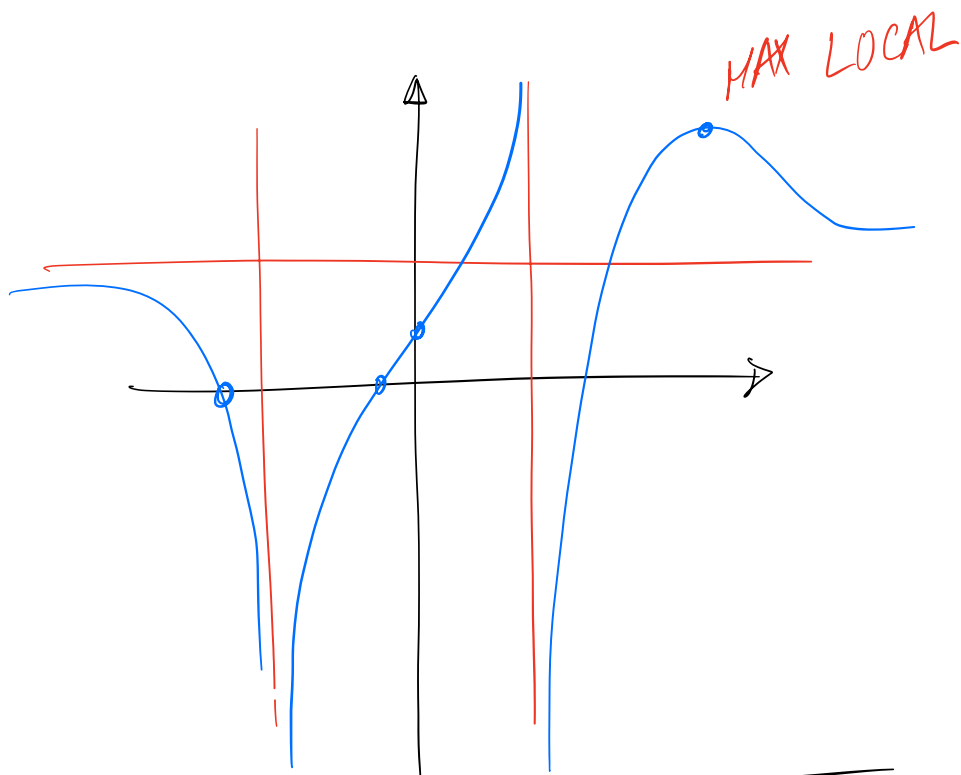
$$(f(x) \cdot g(x))' = f'(x) \cdot g(x) + f(x) \cdot g'(x)$$

D_f

Zeros

Signe

Asymptotes

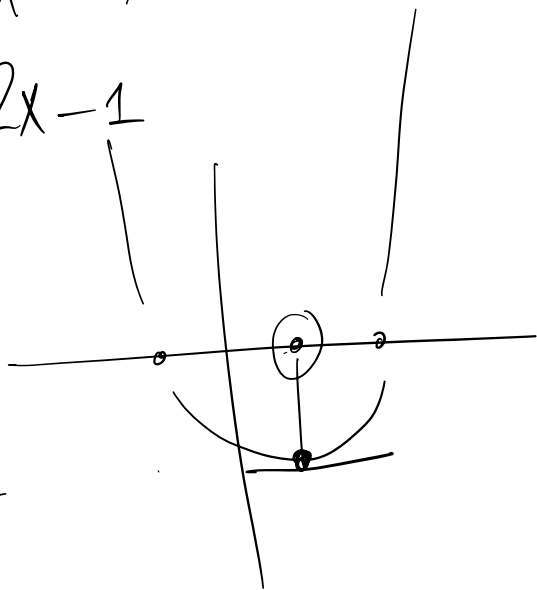


$$x^2 - x - 1$$

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

$$2x - 1 = 0$$

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



$$x = \frac{1 \pm \sqrt{5}}{2} \begin{cases} 1.618 \\ -0.618 \end{cases}$$

$$S \left(\begin{matrix} 1/2 \\ -5/4 \end{matrix} \right)$$

$$\begin{aligned}\left(\frac{x}{x+1}\right)' &= \frac{x' \cdot (x+1) - x \cdot (x+1)'}{(x+1)^2} \\ &= \frac{1 \cdot (x+1) - x \cdot 1}{(x+1)^2} = \frac{x+1-x}{(x+1)^2} \\ &= \frac{1}{(x+1)^2}\end{aligned}$$

$$\left(\frac{1}{x}\right)' = \frac{1' \cdot x - 1 \cdot x'}{x^2} = \frac{0 \cdot x - 1 \cdot 1}{x^2} = \frac{0-1}{x^2}$$

$$\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2} = \frac{-1}{x^2}$$

$$(x^n)' = n \cdot x^{n-1}$$

$$\frac{1}{x^5} = x^{-5}$$

$$\begin{aligned} \left(\frac{1}{x^5}\right)' &= (x^{-5})' \\ &= -5x^{-5-1} \\ &= -5x^{-6} = \frac{-5}{x^6} \end{aligned}$$

$$\left(\frac{f}{g}\right)' = \frac{f' \cdot g - f \cdot g'}{g^2}$$

$$\begin{aligned} \left(\frac{1}{x^5}\right)' &= \frac{(1)' \cdot x^5 - 1 \cdot (x^5)'}{(x^5)^2} = \frac{0 \cdot x^5 - 5x^4}{x^{10}} \\ &= \frac{-5x^4}{x^{10-6}} = \frac{-5}{x^{10-4}} \\ &= \frac{-5}{x^6} \end{aligned}$$

$$\left(\frac{u}{v}\right)' = \frac{u' \cdot v - u \cdot v'}{v^2}$$

$$\left(\frac{2-3x}{3x-2}\right)' = \frac{\overset{-3}{(2-3x)'} \cdot (3x-2) - (2-3x) \cdot \overset{3}{(3x-2)'}}{(3x-2)^2}$$

$$\left(\frac{-\cancel{(3x-2)}}{\cancel{(3x-2)}}\right)' = \frac{-3(3x-2) - (2-3x) \cdot 3}{(3x-2)^2}$$
$$= \frac{-9x + \cancel{6} - \cancel{6} + 9x}{(3x-2)^2} = \frac{0}{(3x-2)^2} = 0$$

- 1