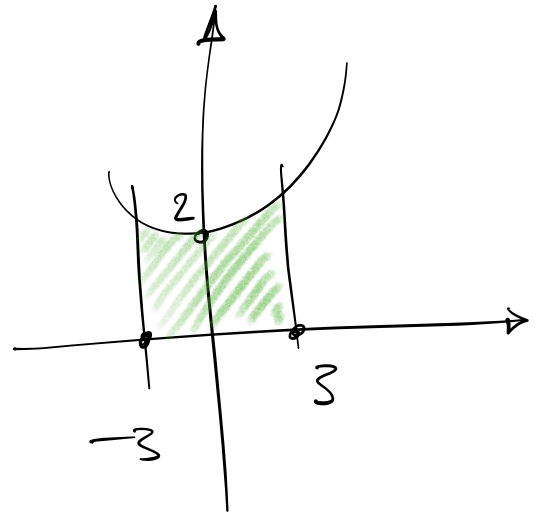


Esquisser le graphe de

$$f(x) = x^2 + 2$$

$$g(x) = 9 - x^2$$



35
1)

$$A = \int_{-3}^3 (x^2 + 2) dx$$

> 0 on qce $f(x) > 0$

$$= \left(\frac{1}{3}x^3 + 2x \right) \Big|_{-3}^3 = \left(\frac{1}{3} \cdot 27 + 2 \cdot 3 \right) - \left(\frac{1}{3} \cdot (-27) - 6 \right)$$

$$= 9 + 6 - (-9 - 6) = 30$$

$$\Rightarrow A = 30$$

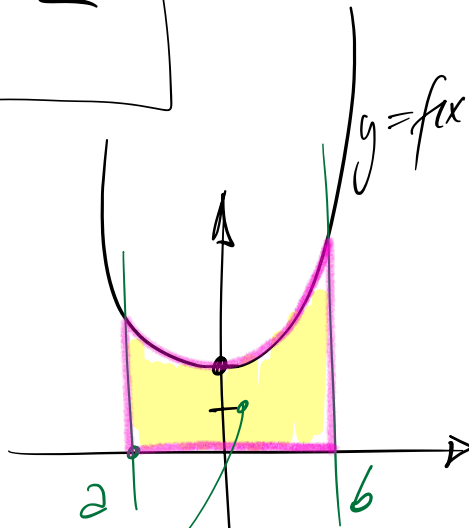
$$f(x) = x^2 + 2$$

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$y = f(x)$ CRM 30

Aires

DESSINER



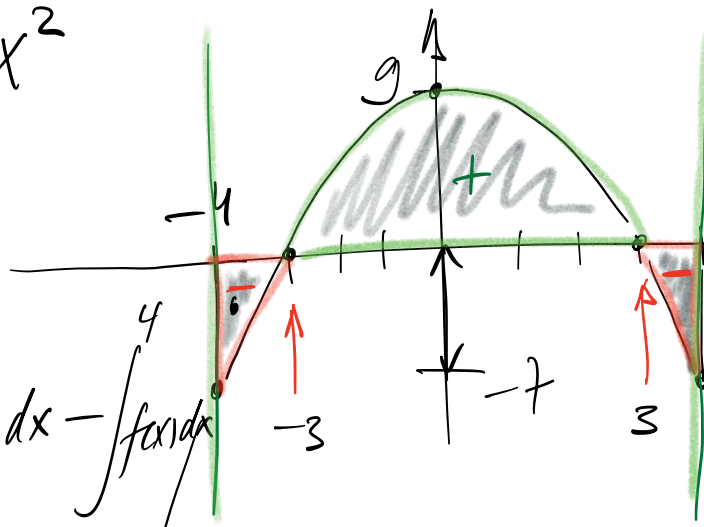
$$f(0) = 2$$

$$\text{Aire} = \int_2^6 f(x) dx$$

$$\text{si } f(x) > 0$$

$$2) f(x) = 9 - x^2$$

negativ



$$f(4) = -7$$

$$9 - (4)^2 =$$

$$9 - 16 = -7$$

$$-\int_{-4}^{-3} f(x) dx + \int_{-3}^3 f(x) dx - \int_3^4 f(x) dx$$

$$A_1 = \frac{10}{3}$$

$$A_2$$

$$A_3 = \frac{10}{3}$$

$$\int f(x) dx = 9x - \frac{1}{3}x^3$$

$$-\left(9x - \frac{1}{3}x^3\right) \Big|_{-4}^{-3} = -\left[(-27 + 9) - (-36 + \frac{64}{3})\right]$$

$$= -\left[-18 + 36 - \frac{64}{3}\right]$$

$$= -\left(18 - \frac{64}{3}\right) = \frac{10}{3}$$

$$\left(9x - \frac{1}{3}x^3\right) \Big|_{-3}^3 = (27 - 9) - (-27 + 9)$$

$$= 54 - 18 = 36$$

$$\Rightarrow A_1 + A_2 + A_3 = \frac{10}{3} + 36 + \frac{10}{3} = \frac{128}{3}$$

$$3) f(x) = \frac{4}{x^2} - 1$$

Signe de f sur $[1; 4]$

$x \neq 0$

$$\frac{4}{x^2} - 1 = 0$$

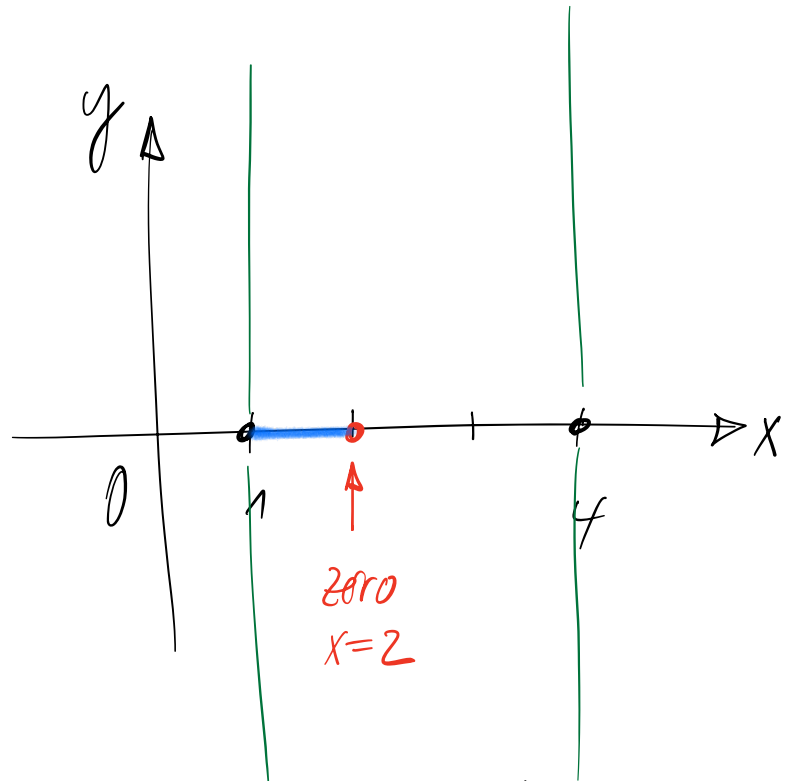
$$\Leftrightarrow \frac{4}{x^2} = 1$$

$$\Leftrightarrow 4 = x^2 \quad \downarrow \cdot x^2$$

$$x = \pm 2$$

$$(-4) - (-5) = 1$$

$$(-5) - (-4) = -1$$



$$\left| \int_1^2 f(x) dx \right| + \left| \int_2^4 f(x) dx \right|$$

$$\int (4x^{-2} - 1) dx = 4 \cdot \frac{1}{-2+1} \cdot x^{-2+1} - x$$

$$= -4 \cdot x^{-1} - x$$

$$= \frac{-4}{x} - x$$

$$\left| \int_1^2 f(x) dx \right| = \left| \left(\frac{-4}{x} - x \right) \right|_1^2$$

$$= \left| \left(\frac{-4}{2} - 2 \right) - \left(\frac{-4}{1} - 1 \right) \right|$$

$$= \left| -4 - (-5) \right| = \left| -4 + 5 \right| = \left| 1 \right| = 1$$

$$\left| \int_2^4 f(x) dx \right| = \left| \left(\frac{-4}{4} - 4 \right) - \left(\frac{-4}{2} - 2 \right) \right|$$

$$= \left| -5 - (-4) \right| = \left| -1 \right| = 1$$

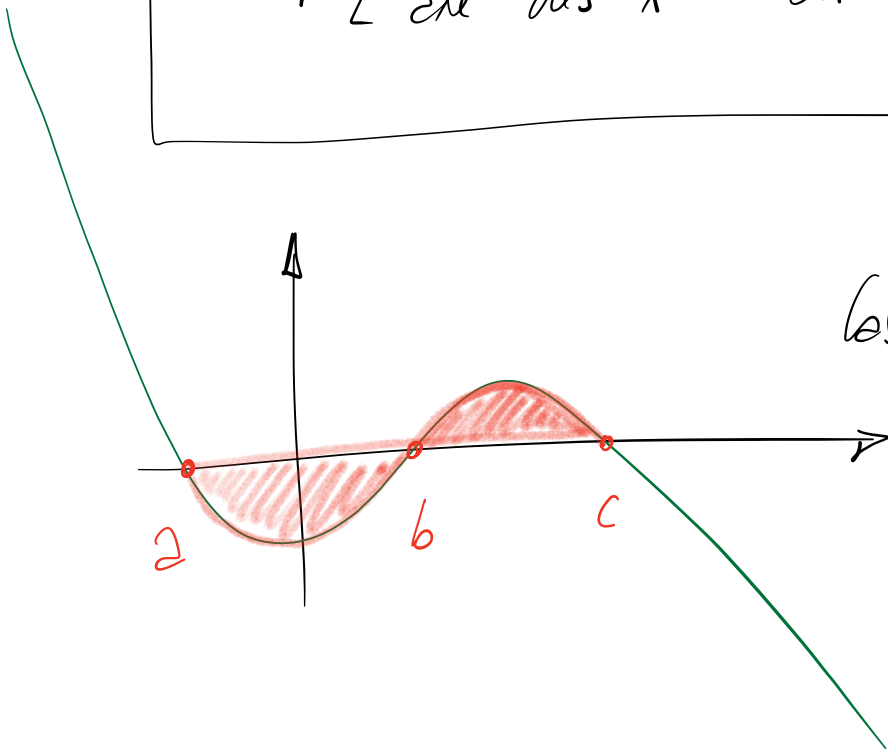
$$A = 1 + 1 = 2$$

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Domaine borné limité par:

- $y = f(x)$ courbe

- L'axe des x : Ox



les particuliers:

$$\left| \int_a^b f(x) dx \right| + \left| \int_b^c f(x) dx \right|$$

$$x^2 - 5x + 4 \quad \text{à l'étudier}$$

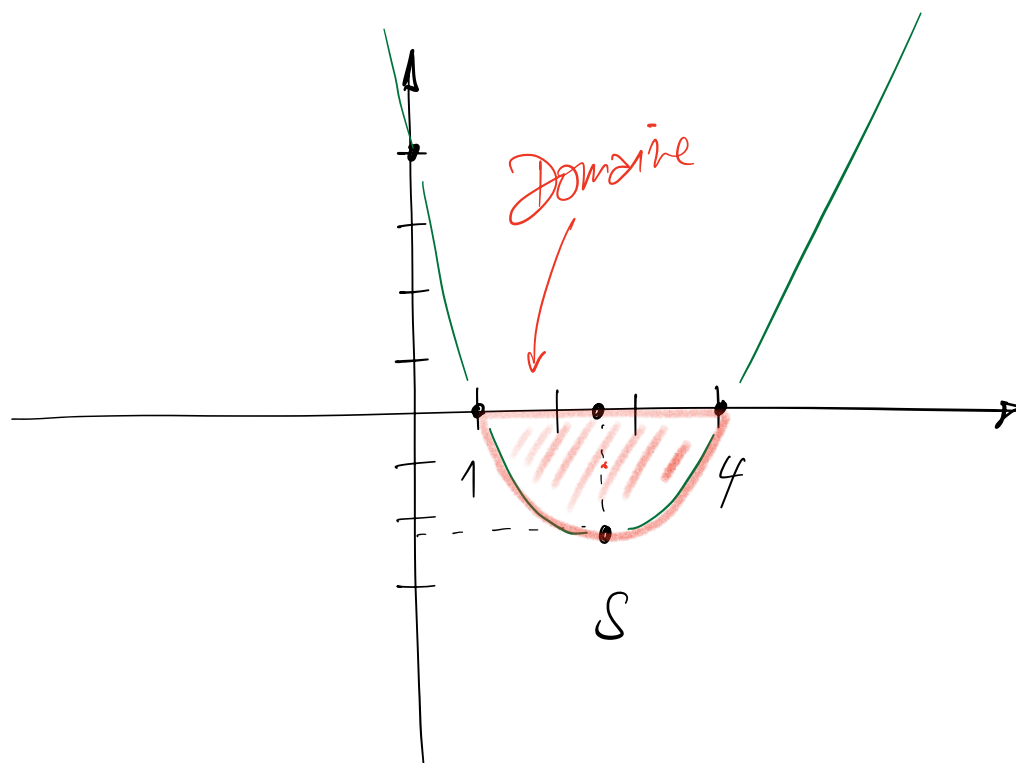
$$f(0) = 4$$

$$(x-1)(x-4) = 0$$

$$x=1$$

$$x=4$$

$$S = \left(\frac{5}{2}, f\left(\frac{5}{2}\right) \right)$$



$$\frac{25}{4} - \frac{25}{2} + 4$$

$$4 - \frac{25}{4}$$

$$-\frac{9}{4} = -2.25$$

$$A = \left| \int_1^4 f(x) dx \right| = \left| \left(\frac{1}{3}x^3 - \frac{5}{2}x^2 + 4x \right) \right|_1^4$$

$$= \left| \left(\frac{64}{3} - \frac{5}{2} \cdot 16 + 16 \right) - \left(\frac{1}{3} - \frac{5}{2} + 4 \right) \right|$$

$$= \left| \frac{64}{3} - 40 + 16 - \frac{1}{3} + \frac{5}{2} - 4 \right|$$

$$= \left| \frac{63}{3} - 28 + \frac{5}{2} \right| = |21 - 28 + 2,5|$$
$$= |-7 + 2,5| = |-4,5| = 4,5$$