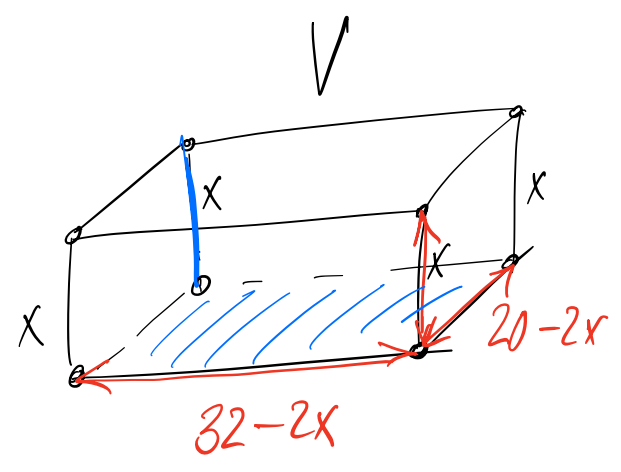
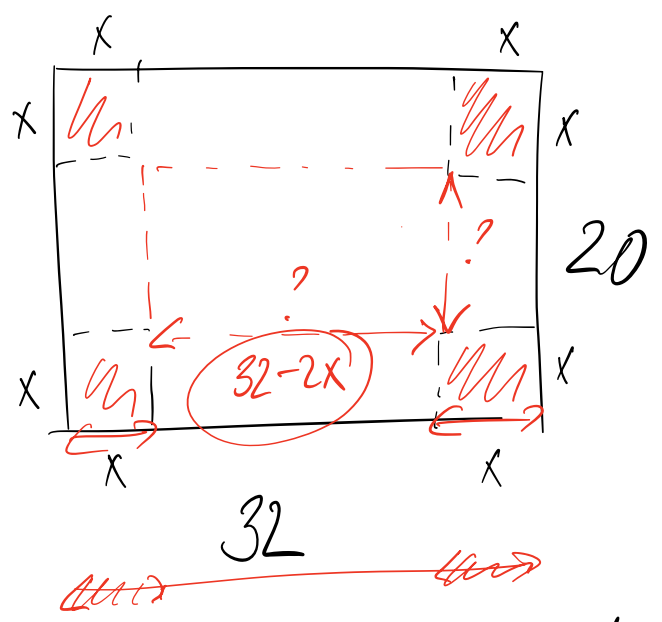


Optimisation : 89 p. 117

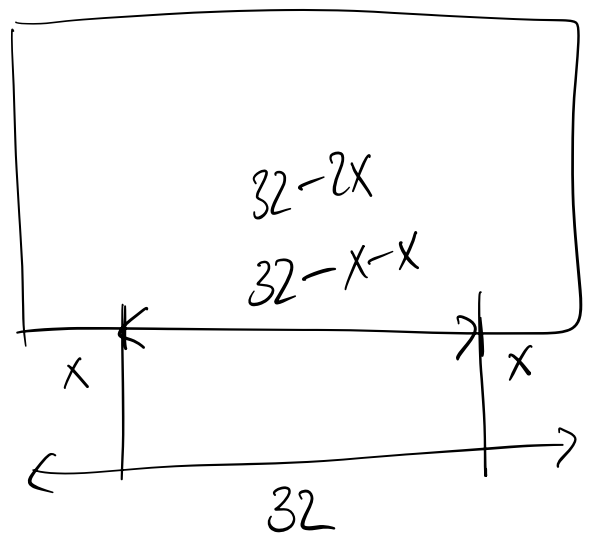
① « Lire »

② Noter les éléments (nombres, dessins)



③ Algèbre $V(x) = (32-2x)(20-2x) \cdot x$

développer
réduire



$$\begin{aligned}
 C &= 2 \cdot 2 (16-x)(10-x) \cdot x \\
 &= 4 (160 - 26x + x^2) \cdot x \\
 &= 4 (160x - 26x^2 + x^3)
 \end{aligned}$$

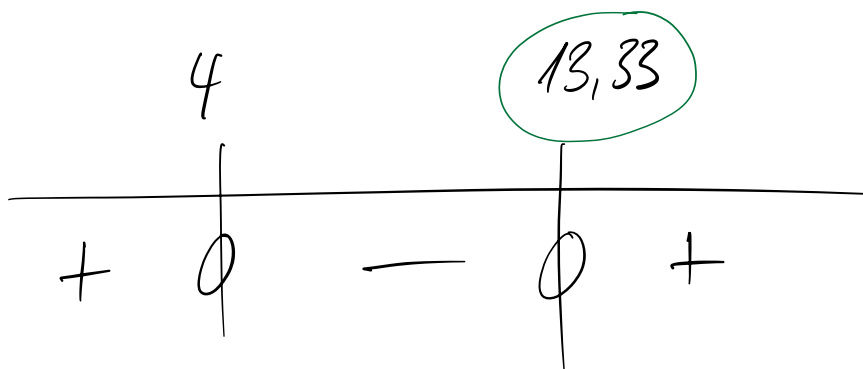
④ Dérivée / croissance / interprétation

$$V'(x) = 4(160 - 52x + 3x^2)$$

$$V'(x) = 0 \Leftrightarrow 3x^2 - 52x + 160 = 0$$

$$x = \frac{52 \pm \sqrt{52^2 - 4 \cdot 3 \cdot 160}}{6} = \frac{52 \pm 28}{6}$$

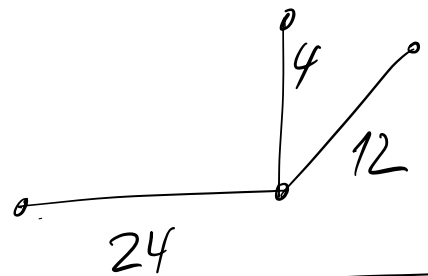
$$x = \begin{cases} 80/6 = 40/3 = 13,3 \\ 24/6 = 4 \end{cases}$$



↗ MAX

$(4; V(4))$

↘ MIN



La hauteur cherchée vaut 4.

$$\left(\begin{aligned} V(4) &= (32 - 2 \cdot 4)(20 - 2 \cdot 4) \cdot 4 \\ &= 24 \cdot 12 \cdot 4 = 288 \cdot 4 = \end{aligned} \right) \text{Rs demandé}$$

$$\frac{2}{3}(288 - 16x) = 0$$

$\neq 0$ $= 0$

$$\text{Si } A \cdot B = 0$$

$$\rightarrow \begin{matrix} A = 0 \\ \text{ou} \\ B = 0 \end{matrix}$$

$$288 - 16x = 0$$

$$288 = 16x$$

$$x = \frac{288}{16}$$

$$(2x - 5)^2 = 0$$

$$(2x - 5) \cdot (2x - 5) = 0$$

$$A \cdot B = 0$$

$$\rightarrow \begin{matrix} A = 0 & \longrightarrow & 2x - 5 = 0 & \Rightarrow & x = 2,5 \\ \text{ou} & & & & \end{matrix}$$

$$B = 0 \longrightarrow (2x - 5 = 0)$$