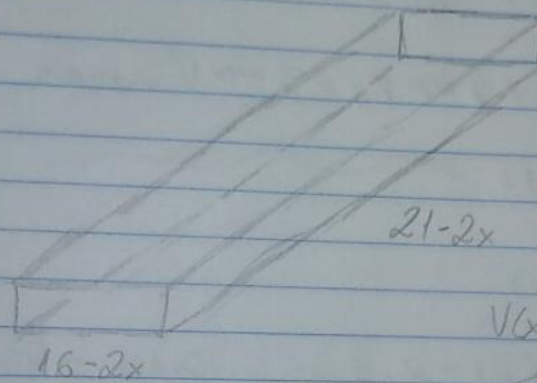
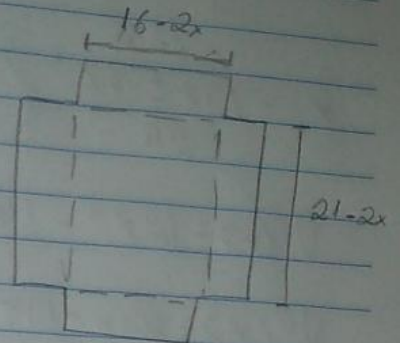
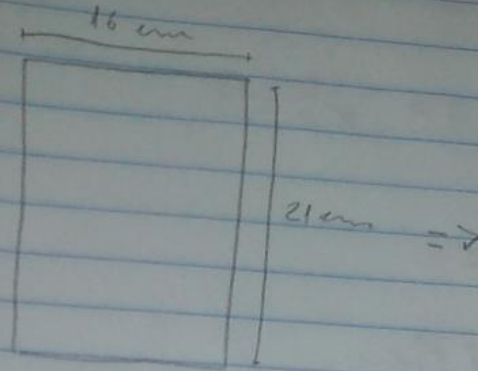


Problema da Caixa



$$V(x) = x(16-2x)(21-2x)$$

$$V(x) = x(336 - 32x - 42x + 4x^2)$$

$$V(x) = x(4x^2 - 74x + 336)$$

$$V'(x) = 0 \text{ (Números críticos)}$$

$$V' = 12x^2 - 74x + 336 = 0$$

data
fecha

D S T Q O S S
D L M M J V S

$$x_c = \frac{-(-148) \pm \sqrt{(-148)^2 - 4 \cdot 12 \cdot 336}}{2 \cdot 12} = \frac{148 \pm \sqrt{6776}}{24}$$

$$x_c = \frac{148 \pm 76}{24} \quad \left\{ \begin{array}{l} x_c^1 = 9,3 \\ x_c^2 = 3 \end{array} \right.$$

$$V'(x) = 12x^2 - 148x + 336$$

$$V''(x) = 24x - 148 \quad \text{Máx / Mín}$$

$$V''(9,3) = 24 \cdot 9,3 - 148 = 75,2 > 0 \Rightarrow x_c \rightarrow V_{\text{mín}}$$

$$V''(3) = 24 \cdot 3 - 148 = -76 < 0 \Rightarrow x_c = 3 \rightarrow V_{\text{máx}}$$

$$V(x) = x \cdot (16 - 2x) \cdot (21 - 2x)$$

$$V_{\text{máx}}(3) = 3 \cdot (16 - 2 \cdot 3) \cdot (21 - 2 \cdot 3) = 3 \cdot 10 \cdot 15 = 450 \text{ cm}^2$$

