

Dozen met vaste inhoud

$$8. \quad I = \text{lengte} \cdot \text{breedte} \cdot \text{hoogte} = (15 - 2x) \cdot (15 - 2x) \cdot x = x \cdot (15 - 2x)^2$$

$$x \cdot (15 - 2x)^2 = 100 \quad x \cdot (225 - 60x + 4x^2) = 225x - 60x^2 + 4x^3 = 100$$

Voer in: $y_1 = 225x - 60x^2 + 4x^3$ $y_2 = 100$

Intersect geeft $x \approx 0,51$ \vee $x \approx 5,34$

Dus lengte kartonnen rechthoek = $15,0 + 15,0 - 0,51 \approx 29,5$ dm

òf

lengte kartonnen rechthoek = $15,0 + 15,0 - 5,34 \approx 24,7$ dm

9. De bodem is $b - 2x$ bij $b - 2x$

$$I = x \cdot (b - 2x)^2$$

$$x \cdot (b - 2x)^2 = 100 \quad (b - 2x)^2 = \frac{100}{x}$$

10. Lengte rechthoek = $b + b - x = 2b - x$

$$A = b \cdot (2b - x) = \left(2x + \frac{10}{\sqrt{x}}\right) \cdot \left(2 \left(2x + \frac{10}{\sqrt{x}}\right) - x\right) = \left(2x + \frac{10}{\sqrt{x}}\right) \cdot \left(3x + \frac{20}{\sqrt{x}}\right) =$$

$$= 6x^2 + \frac{40x}{\sqrt{x}} + \frac{30x}{\sqrt{x}} + \frac{200}{x} = 6x^2 + 70\sqrt{x} + \frac{200}{x}$$

11. $A_2 = 6x_2^2 + 70\sqrt{x_2} + \frac{200}{x_2}$

$$x_2 = 4 \cdot x_1$$

$$A_2 = 6 \cdot (4x_1)^2 + 70\sqrt{4x_1} + \frac{200}{4x_1}$$

$$A_1 = A_2$$

$$6 \cdot (4x_1)^2 + 70\sqrt{4x_1} + \frac{200}{4x_1} = 6x_1^2 + 70\sqrt{x_1} + \frac{200}{x_1}$$

Voer in: $y_1 = 6 \cdot (4x)^2 + 70\sqrt{4x} + 200/4x$

$$y_2 = 6x^2 + 70\sqrt{x} + 200/x$$

Intersect geeft: $x \approx 0,97$ dus $x_1 \approx 0,97$ dm