

De formule van Heron

$$\begin{array}{l|l}
 3. & s = 6 \\
 & s - a = 3 \\
 & s - b = 2 \\
 & s - c = 1
 \end{array}
 \quad
 \left|
 \right.
 \quad
 H = \sqrt{6 \cdot 3 \cdot 2 \cdot 1} = 6$$

of $H = \frac{1}{2} \cdot 3 \cdot 4 = 6$

De formule geeft dus de juiste uitkomst.

$$\begin{array}{l}
 4. \quad s = \frac{1}{2} (3 + 7 + x) = 5 + \frac{1}{2}x \\
 s - a = \frac{1}{2}x + 2 \\
 s - b = \frac{1}{2}x - 2 \\
 s - c = 5 - \frac{1}{2}x \\
 \text{Volgens Heron:}
 \end{array}$$

$$H = \sqrt{\left(5 + \frac{1}{2}x\right) \cdot \left(\frac{1}{2}x + 2\right) \cdot \left(\frac{1}{2}x - 2\right) \cdot \left(5 - \frac{1}{2}x\right)} = \sqrt{\left(25 - \frac{1}{4}x^2\right) \cdot \left(\frac{1}{4}x^2 - 4\right)}$$

$$\begin{aligned}
 5. \quad \frac{d}{dx} \left(25 - \frac{1}{4}x^2\right) \cdot \left(\frac{1}{4}x^2 - 4\right) &= -\frac{1}{2}x \cdot \left(\frac{1}{4}x^2 - 4\right) + \frac{1}{2}x \cdot \left(25 - \frac{1}{4}x^2\right) \\
 &= \frac{1}{2}x \cdot \left(25 - \frac{1}{4}x^2 - \frac{1}{4}x^2 + 4\right) \\
 &= \frac{1}{2}x \left(29 - \frac{1}{2}x^2\right) = 0
 \end{aligned}$$

geeft $x = 0$ of $x = \pm\sqrt{58} \quad \rightarrow \quad x = \sqrt{58}$