De formule van Heron

3. $s = 6$
$s - a = 3$
$s - b = 2$
$s - c = 1$

$$H = \sqrt{6 \cdot 3 \cdot 2 \cdot 1} = 6$$

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

De formule geeft dus de juiste uitkomst.

4. $s = \frac{1}{2}(3 + 7 + x) = 5 + \frac{1}{2}x$
$s - a = \frac{1}{2}x + 2$
$s - b = \frac{1}{2}x - 2$
$s - c = 5 - \frac{1}{2}x$

Volgens Heron:

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

5. $$\frac{d}{dx}(25 - \tfrac{1}{4}x^2) \cdot (\tfrac{1}{4}x^2 - 4) = -\tfrac{1}{2}x \cdot (\tfrac{1}{4}x^2 - 4) + \tfrac{1}{2}x \cdot (25 - \tfrac{1}{4}x^2)$$
$$= \tfrac{1}{2}x \cdot (25 - \tfrac{1}{4}x^2 - \tfrac{1}{4}x^2 + 4)$$
$$= \tfrac{1}{2}x(29 - \tfrac{1}{2}x^2) = 0$$

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