

## Rechthoek om driehoek

7. In  $\Delta APB$ :  $AP = AB \cdot \cos x = 1 \cdot \cos x = \cos x$

In  $\Delta ARC$   $\angle A = \frac{1}{2}\pi - (x + \frac{1}{6}\pi) = \frac{1}{3}\pi - x$

$$AR = AC \cdot \cos(\angle A) = 1 \cdot \cos(\frac{1}{3}\pi - x)$$

$$\text{Opp} = O(x) = AP \cdot AR = \cos x \cdot \cos(\frac{1}{3}\pi - x)$$

8.  $O'(x) = -\sin x \cdot \cos(\frac{1}{3}\pi - x) + \cos x \cdot (-\sin(\frac{1}{3}\pi - x)) \cdot (-1)$

$$= -\sin x \cdot \cos(\frac{1}{3}\pi - x) + \cos x \cdot \sin(\frac{1}{3}\pi - x)$$

$$= \sin(-x) \cdot \cos(\frac{1}{3}\pi - x) + \cos(-x) \cdot \sin(\frac{1}{3}\pi - x)$$

Met  $\sin\alpha \cdot \cos\beta + \cos\alpha \cdot \sin\beta = \sin(\alpha + \beta)$

volgt:

$$O'(x) = \sin(-x + \frac{1}{3}\pi - x) = \sin(\frac{1}{3}\pi - 2x)$$

9.  $O'(x) = 0 \quad \sin(\frac{1}{3}\pi - 2x) = 0 \quad \rightarrow \quad \frac{1}{3}\pi - 2x = 0 + k \cdot \pi$

$$x = \frac{1}{6}\pi$$

$$x = \frac{1}{6}\pi \quad \rightarrow \quad O(\frac{1}{6}\pi) = \frac{3}{4}$$

$$x = 0 \quad \rightarrow \quad O(0) = \frac{1}{2} \quad \rightarrow \quad O \text{ zit in het interval } [\frac{1}{2}; \frac{3}{4}]$$

10. BC is middellijn van omgeschreven cirkel  $\rightarrow \angle BSC = 90^\circ$  (stelling van Thales)

AB is middellijn van omgeschreven cirkel  $\rightarrow \angle ASB = 90^\circ$  (stelling van Thales)

Dus:  $\angle BSC + \angle ASB = 90^\circ + 90^\circ = 180^\circ \rightarrow \angle ASC$  is gestrekte hoek

Dus: S op AC