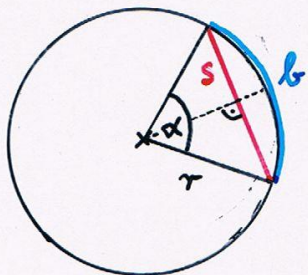


Hausaufgabe * Mathematik * Klasse 9e

S. 142/18



Es gilt allgemein:

$$\sin\left(\frac{\alpha}{2}\right) = \frac{\frac{s}{2}}{r} = \frac{s}{2r} \quad \text{und}$$

$$b = \frac{\alpha}{360^\circ} \cdot 2\pi r = \frac{\alpha}{180^\circ} \cdot \pi \cdot r$$

a, $r = 3,2 \text{ cm}$; $\alpha = 80^\circ$; $s = ?$; $b = ?$

$$\sin \frac{\alpha}{2} = \frac{s}{2r} \Rightarrow s = 2 \cdot 3,2 \text{ cm} \cdot \sin 40^\circ = 4,113 \dots \text{ cm} \approx 4,1 \text{ cm}$$

$$b = \frac{80^\circ}{180^\circ} \cdot 3,2 \text{ cm} \cdot \pi = 4,468 \dots \text{ cm} \approx 4,5 \text{ cm}$$

b, $b = 6,3 \text{ cm}$; $\alpha = 80^\circ$; $r = ?$; $s = ?$

$$b = \frac{\alpha}{180^\circ} \cdot \pi \cdot r \Rightarrow r = \frac{b \cdot 180^\circ}{\pi \cdot \alpha} = \frac{6,3 \text{ cm} \cdot 180^\circ}{\pi \cdot 80^\circ} = 4,51 \dots \text{ cm}$$

$$r = 4,5 \text{ cm}; \quad s = 2r \cdot \sin \frac{\alpha}{2} = 2 \cdot 4,51 \dots \text{ cm} \cdot \sin 40^\circ$$

$$s = 5,80 \dots \text{ cm} \approx 5,8 \text{ cm}$$

c, $r = 74 \text{ m}$; $b = 185 \text{ m}$; $\alpha = ?$; $s = ?$

$$\alpha = \frac{b \cdot 180^\circ}{\pi \cdot r} = \frac{185 \cdot 180^\circ}{\pi \cdot 74} = 143,23 \dots^\circ \approx 143,2^\circ$$

$$s = 2r \cdot \sin \frac{\alpha}{2} = 140,44 \dots \text{ m} \approx 140 \text{ m}$$