

## 2. Bez

## Kreisberechnungen

## Lösungen LK

1.  $u = b \cdot 3 = 63,9m$

$$r = \frac{u}{2\pi} = 10,17 \dots m$$

$$A_S = \frac{r^2\pi}{3} = \underline{\underline{108,3m^2}}$$

2.  $A = A_S \cdot 8 = 48m^2$

$$r = \sqrt{\frac{A}{\pi}} = 3,9 \dots m$$

$$b = \frac{2r\pi}{8} = \underline{\underline{3,1m}}$$

3.  $r = \frac{d}{2} = 9mm$

$$b = \frac{2r\pi \cdot \alpha}{360} = \underline{\underline{42,7mm}}$$

$$A_S = \frac{r^2\pi \cdot \alpha}{360} = \underline{\underline{192,3mm^2}}$$

4.  $A = \frac{A_S \cdot 360}{43} = 1046,5cm^2$

$$r = \sqrt{\frac{A}{\pi}} = \underline{\underline{18,3cm}}$$

$$b = \frac{2r\pi \cdot \alpha}{360} = \underline{\underline{13,7cm}}$$

5.  $b = \frac{2r\pi \cdot \alpha}{360}$

$$r = \frac{b \cdot 360}{2\pi \cdot \alpha} = \underline{\underline{9,55m}}$$

$$A_S = \frac{r^2\pi \cdot \alpha}{360} = \underline{\underline{83,56m^2}}$$

6. a)  $r = \frac{u}{2\pi} = \underline{\underline{299,8km}}$

b)  $r = \sqrt{\frac{A}{\pi}} = \underline{\underline{114,6km}}$

7.  $r_{innen} = \frac{d_{innen}}{2} = 65cm$

$$r_{aussen} = r_{innen} + 5cm = 70cm$$

$$A_{innen} = (r_{innen})^2 \cdot \pi = 13273,2cm^2$$

$$A_{aussen} = (r_{aussen})^2 \cdot \pi = 15393,8cm^2$$

$$A_{Ring} = A_{aussen} - A_{innen} = \underline{\underline{2120,6cm^2}}$$

8.  $A_1 = (r_1)^2 \cdot \pi$

$$r_2 = 2 \cdot r_1$$

$$A_2 = (2 \cdot r_1)^2 \cdot \pi = 4r_1^2 \cdot \pi = 4 \cdot A_1 \rightarrow \text{Die Fläche wird } \underline{\underline{\text{vervierfacht}}}.$$

9.  $A = r^2\pi = \left(\frac{x}{5}\right)^2 \cdot \pi = \underline{\underline{\frac{x^2\pi}{25}}}$

10. a)  $A_{total} = A_{Quadrat} + A_{Viertelkreis}$

$$u_{total} = 2a + u_{Dreiviertelkreis}$$

$$A_{total} = \underline{\underline{a^2 + \frac{a^2\pi}{4}}}$$

$$u_{total} = 2a + \frac{3 \cdot 2a\pi}{4} = \underline{\underline{2a + \frac{3a\pi}{2}}}$$

b)  $A_{total} = A_{grosser Halbkreis} + A_{mittlerer Halbkreis} - A_{kleiner Kreis}$

$$A_{total} = \frac{(2e)^2\pi}{2} + \frac{e^2\pi}{2} - \left(\frac{e}{2}\right)^2\pi = \frac{4e^2\pi}{2} + \frac{e^2\pi}{2} - \frac{e^2\pi}{4} = \frac{8e^2\pi}{4} + \frac{2e^2\pi}{4} - \frac{e^2\pi}{4} = \underline{\underline{\frac{9e^2\pi}{4}}}$$

$$u_{total} = u_{grosser Halbkreis} + u_{mittlerer Halbkreis} + u_{kleiner Kreis}$$

$$u_{total} = \frac{4e\pi}{2} + \frac{2e\pi}{2} + e\pi = 2e\pi + e\pi + e\pi = \underline{\underline{4e\pi}}$$