

Planimetria - mieszanka zadań ciekawych ZI-TK

zadanie 131

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3D

1 zadanie 131

$$\alpha = 30^\circ$$

$$\sin \angle AO_1B \cdot \sin 30^\circ = \frac{r_1}{|AO_1|}$$

$$\frac{\sqrt{3}}{2} = \frac{r_1}{|AO_1|}$$

$$|AO_1| = \frac{2r_1}{\sqrt{3}} = r_1 \sqrt{3}$$

$$|AO_2| = r_1 \sqrt{3} + r_1 + r_2$$

$$\triangle AO_1B \sim \triangle AO_2C$$

$$\frac{r_1}{|AO_1|} = \frac{r_2}{|AO_2|}$$

$$\frac{r_1}{r_1 \sqrt{3}} = \frac{r_2}{r_1 \sqrt{3} + r_1 + r_2}$$

$$r_2 \sqrt{3} = r_1(1 + \sqrt{3}) + r_2$$

$$r_2(\sqrt{3} - 1) = r_1(\sqrt{3} + 1)$$

$$\frac{r_2}{r_1} = \frac{\sqrt{3}+1}{\sqrt{3}-1} = \frac{3+1+2\sqrt{3}}{3-1} = 2 + \sqrt{3}$$

$$\frac{P_2}{P_1} = \frac{\pi r_2^2}{\pi r_1^2} = \left(\frac{r_2}{r_1}\right)^2 = (2 + \sqrt{3})^2 = 7 + 4\sqrt{3}$$

