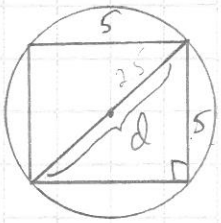
9,4



Pythagoras: $5^2 + 5^2 = d^2$

$\Leftrightarrow d^2 = 50 \quad |\sqrt{}$

$\Leftrightarrow d = \pm\sqrt{50}$

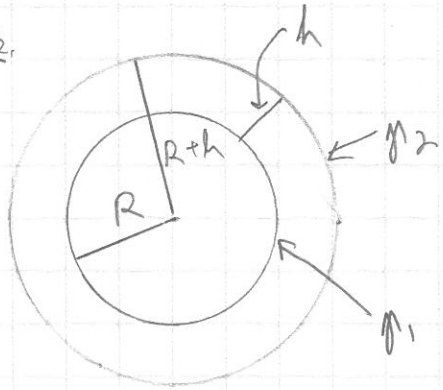
$\Rightarrow r = \frac{1}{2}d = \frac{1}{2}\sqrt{50}$

$A = \pi r^2 = \pi\left(\frac{1}{2}\sqrt{50}\right)^2 = \pi \cdot \left(\frac{1}{2}\right)^2 \cdot \left(\sqrt{50}\right)^2 = \pi \cdot \frac{1}{4} \cdot 50$

$= \frac{25}{2}\pi$

Esim. Maapallon ympäri kiedotaan köysi tiukasti. Jatketaan köyttä 1 metrillä ja nostetaan köysi yhtä korealle maan pinnasta. Miten korealla köysi on?

Ratk.



$p_2 = p_1 + 1$ ← 1m

$\Leftrightarrow 2\pi(R+h) = 2\pi R + 1$

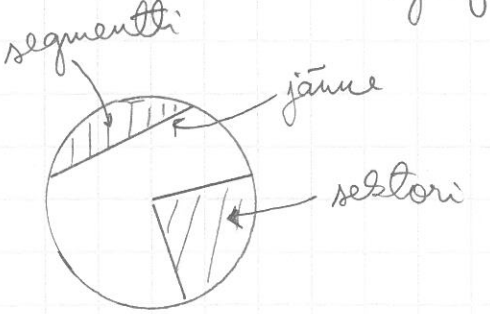
$\Leftrightarrow 2\pi R + 2\pi h = 2\pi R + 1$

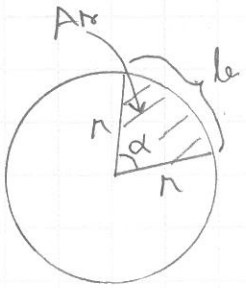
$\Leftrightarrow 2\pi h = 1 \quad |:2\pi$

$\Leftrightarrow h = \frac{1}{2\pi} \approx 0{,}15915\,m \approx 0{,}16\,m$

Huom. $h = \frac{1}{2\pi}$ ei riipu R:stä!

10. Ympyrän sektori ja segmentti





b ja α ovat suoraan verrannolliset:

$b = k\alpha$

$\left.\begin{matrix}\alpha = 360° \\ b = 2\pi r\end{matrix}\right\} \Rightarrow 2\pi r = k \cdot 360° \quad |:360°$

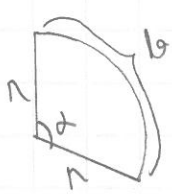
$\Leftrightarrow k = \frac{2\pi r}{360°}$

$\Rightarrow b = \frac{2\pi r}{360°} \cdot \alpha = \frac{\alpha}{360°} \cdot 2\pi r$

$$\boxed{b = \frac{\alpha}{360°} 2\pi r} \quad \text{YMPYRÄSEKTORIN KAAREN PITUUS}$$

$$\boxed{A_s = \frac{\alpha}{360°} \pi r^2} \quad \text{—"—} \quad \text{PINTA-ALA}$$

10.3



$r = 4, \quad \alpha = 120°$

$\frac{120°}{360°} = \frac{1}{3}$

piiri: $b + 2r = \frac{\alpha}{360°} \cdot 2\pi r + 2r = \frac{120°}{360°} \cdot 2\pi \cdot 4 + 2 \cdot 4 = \frac{8\pi}{3} + 8$