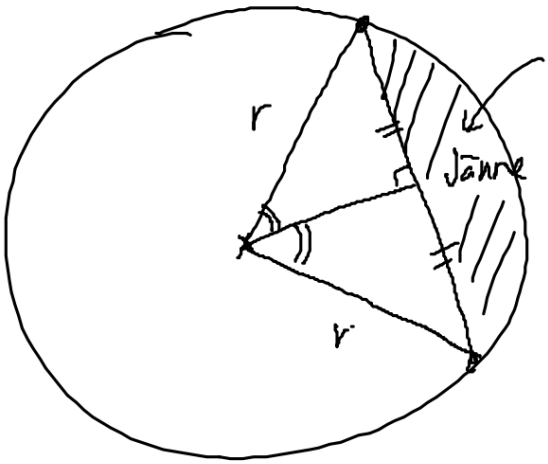
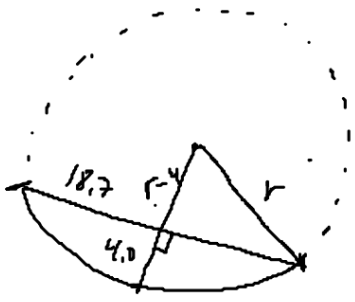
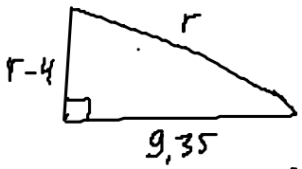
# Ympyrän sovelluksia




segmentti

287.



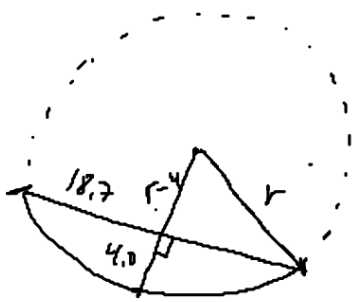



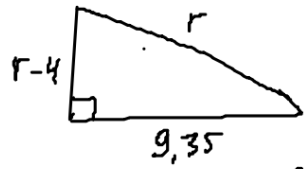

$(r-4)^2 + 9{,}35^2 = r^2$

$(r-4)(r-4) + 87{,}4225 = r^2$

$r^2 - 4r - 4r + 16 + 87{,}4225 = r^2$

287.




$$(r-4)^2 + 9{,}35^2 = r^2$$

$$(r-4)(r-4) + 87{,}4225 = r^2$$

$$r^2 - 4r - 4r + 16 + 87{,}4225 = r^2$$

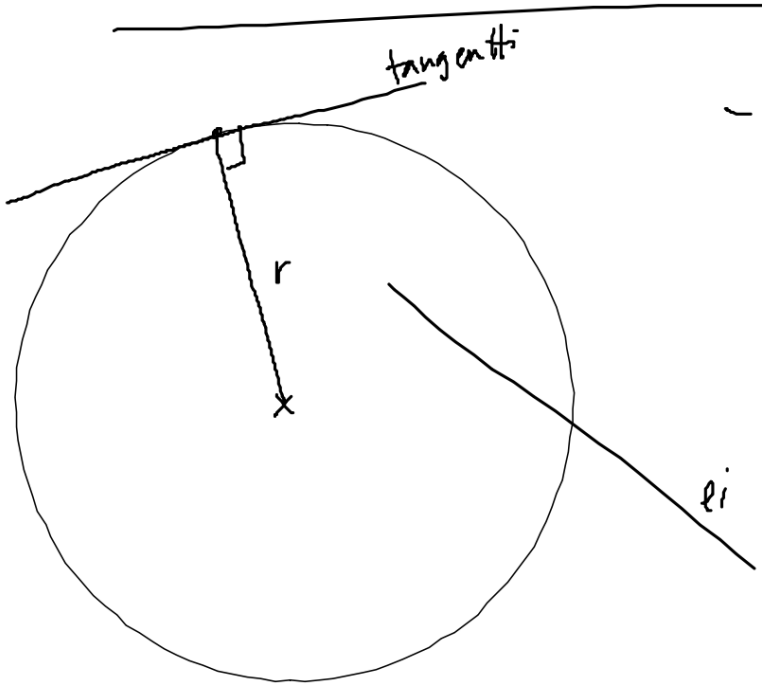
$$r^2 - 8r + 103{,}4225 = r^2$$

$$-8r = -103{,}4225 \quad /:(-8)$$

$$r = 12{,}923$$

V: halk. h. 26 cm

# Ympyrän tangentti



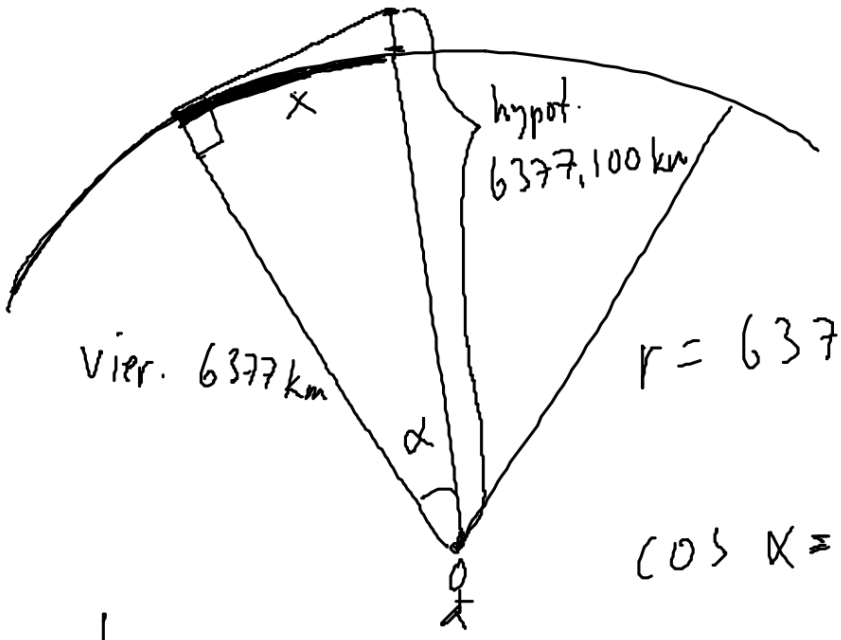

- tangentti = suora joka koskettaa ympyrän kehää

- ympyrän tangentin ja kosketuspisteeseen piirretyn säteen välinen kulma = 90°

Esim.

Laske kaaren pituus

100m = 0,100km  X.




r = 6377 km

$$\cos\alpha = \frac{6377}{6377{,}100}$$

$$\alpha = \cos^{-1}\left(\frac{6377}{6377{,}100}\right)$$

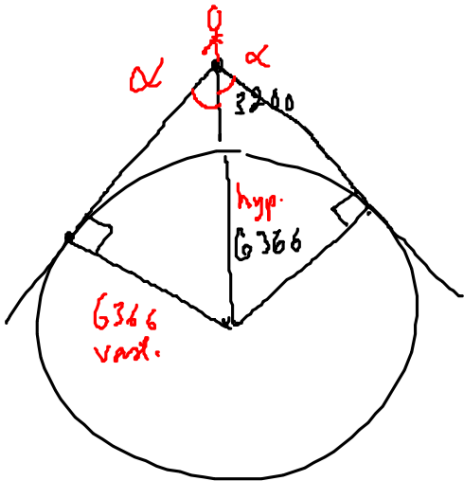
$\alpha = 0{,}321°$

| kulma | kaari |
|---|---|
| 360° | $2\pi \cdot 6377$ |
| 0,321° | X |

$$X = \frac{0{,}321 \cdot 2\pi \cdot 6377}{360} \approx 35{,}7$$

v: n. 36 km

295.




$p = \boxed{40000\ km = 2\pi r}$

$r = \frac{40000\ km}{2\pi}$

$= 6366\ km$

$\sin\alpha = \frac{6366}{6366+3200}$

$\alpha = \sin^{-1}\left(\frac{6366}{(6366+3200)}\right)$

$= 41{,}79°$

$2\alpha = 83{,}4°$

V: n. 83°