

A

Week 7

$$a) R = \frac{\eta l}{S} \quad 2 \cdot \frac{1,77 \cdot 10^{-6}}{1 \cdot 2 \cdot 10^{-6}} \cdot 100 = 177 \Omega$$

initieële gedissipeerde vermogen:

$$P = I^2 R$$

$$P = 5^2 \cdot 177 = 4425 \text{ W}$$

$$b) R = \frac{1,77 \cdot 100}{1 \cdot 2 \cdot 2} = 44,25 \Omega$$

$$P = I^2 R = 25 \cdot 44,25 = 1106,25 \text{ W}$$

$$c) 1 \text{ staaf: } \frac{1,77 \cdot 100}{1 \cdot 2} = 88,5 \Omega$$

$$\begin{aligned} R(1 + \alpha \Delta T) &= R_{\text{staaf}} \\ 44,25(1 + \alpha \Delta T) &= 88,5 \end{aligned}$$

$$1 + \alpha \Delta T = 2$$

$$\alpha \Delta T = 1$$

$$\alpha = 3 \cdot 10^{-3}$$

$$\Delta T = 1/\alpha$$

$$\Delta T = 333 \leftarrow \text{toename}$$

$$333 + 20 = 353 \text{ } ^\circ\text{C} \leftarrow T \text{ draad}$$