

## 7. Hausübung

1213 allgemein

$$\text{NB: } V = z^2 \pi l \rightarrow \max.$$

$$\text{NB: } l : (R - z) = h : (R - r)$$

$$l \cdot (R - r) = h \cdot (R - z)$$

$$l = \frac{Rh - hz}{R - r}$$

$$\text{a) } l = \frac{20 - 4z}{2} = 10 - 2z$$

$$z \in [0; 5]$$

$$\text{NB: } V = z^2 \pi \cdot (10 - 2z)$$

$$V(z) = 10\pi z^2 - 2\pi z^3$$

$$V'(z) = 20\pi z - 6\pi z^2 = 0$$

$$z(20\pi - 6\pi z) = 0$$

$$(z_1 = 0) \quad \underline{\underline{z_{2\pi} = \frac{10}{3}}}$$

$$6\pi z = 20\pi \quad | : 6\pi$$

$$z = \frac{10}{3}$$

$$V''(z) = 20\pi - 12\pi z$$

$$V''\left(\frac{10}{3}\right) = 20\pi - 40\pi < 0 \rightarrow \text{Max.}$$

