

LÖSUNG ZU 307:

$$\text{Hauptbedingung: } V_{\text{Kegel}} = \frac{r^2 \pi h}{3}$$

$$\text{Nebensatz (Strahlensatz): } R : H = r : (H - h)$$

$$R \cdot (H - h) = rH$$

$$RH - Rh = rH \quad / - Hr \quad / + Rh$$

$$RH - rH = Rh \quad / : R$$

$$\frac{RH - rH}{R} = h$$

$$V(r) = \frac{r^2 \pi \cdot \frac{RH - rH}{R}}{3} = \frac{r^2 \pi RH - r^3 \pi H}{3} = \frac{r^2 \pi RH - r^3 \pi H}{3R}$$

$$V'(r) = \frac{2r \pi RH - 3r^2 \pi H}{3R}$$

$$\frac{2r \pi RH - 3r^2 \pi H}{3R} = 0 \quad / \cdot 3R$$

$$\pi H \cdot (2rR - 3r^2) = 0 \quad / : \pi H \quad / + 3r^2$$

$$2rR = 3r^2 \quad / : r$$

$$2R = 3r \quad / : 3$$

$$\frac{2R}{3} = r$$

$$h = \frac{RH - \frac{2R}{3} \cdot H}{R} = H - \frac{2}{3}H = \frac{1}{3}H$$

