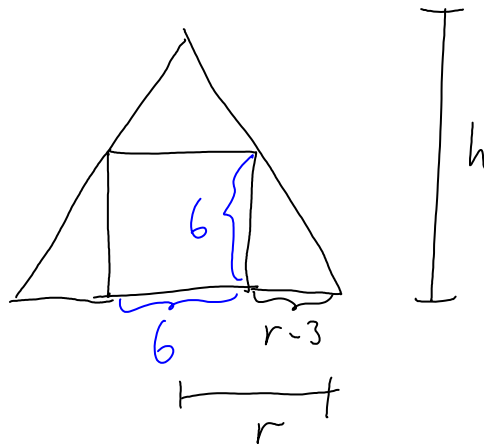


Tvärsnitt



$$\text{Likformighet : } \frac{6}{r-3} = \frac{h}{r} \Leftrightarrow h = \frac{6r}{r-3}$$

Vi ska minimera

$$V(r) = \frac{\pi r^2 h}{3} = \frac{\pi r^2 \cdot \frac{6r}{r-3}}{3} = 2\pi \cdot \frac{r^3}{r-3}$$

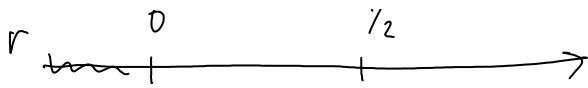
$$\Rightarrow V'(r) = 2\pi \cdot \frac{3r^2(r-3) - r^3 \cdot 1}{(r-3)^2} = 2\pi \cdot \frac{2r^3 - 9r^2}{(r-3)^2}$$

$$V'(r) = 0 \Rightarrow 2r^3 - 9r^2 = 0 \Leftrightarrow r^2(2r - 9) = 0$$

$$\Leftrightarrow r = \frac{9}{2} \quad (\text{ty } r > 0)$$

Teckenstudie

9,



V' - 0 +

V ↘ ↗

Min då $r = \frac{9}{2}$ med värdet

$$V\left(\frac{9}{2}\right) = 2\pi \cdot \frac{\left(\frac{9}{2}\right)^3}{\frac{9}{2} - 3} = 2\pi \cdot \frac{9^3}{\frac{3}{2} \cdot 2^3} = \pi \cdot \frac{3^5}{2} = \frac{243\pi}{2}$$