



Tydliggen gäller $h^2 + r^2 = 3$ (Pyth sats)

Vi ska maximera

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

\uparrow
 $h^2 + r^2 = 3 \Leftrightarrow r^2 = 3 - h^2$

dvs

$$V(h) = \frac{\pi}{3} (3h - h^3), \quad 0 < h < \sqrt{3}$$

\Rightarrow

$$V'(h) = \frac{\pi}{3} (3 - 3h^2) = 0 \Leftrightarrow h = \pm 1$$

$$V''(h) = \frac{\pi}{3} (-6h) \Rightarrow V''(1) < 0$$

Alltså ger $h=1$ lokalt (och globalt) max.

Radien blir : $r^2 = 3 - 1^2 = 2$

\Leftrightarrow

$r = (\pm) \sqrt{2}$