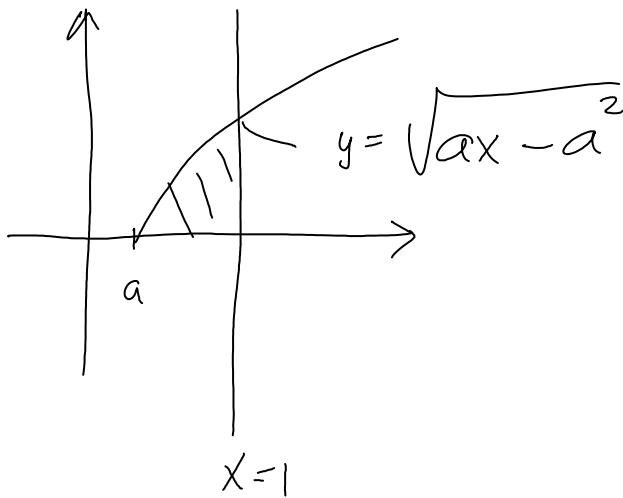


Skiss av område: $(0 < a < 1)$



$$V(a) = \pi \int_a^1 \left(\sqrt{ax - a^2} \right)^2 dx = \pi \int_a^1 (ax - a^2) dx =$$

$$= \pi \left[\frac{ax^2}{2} - a^2x \right]_a^1 = \pi \left(\frac{a}{2} - a^2 - \frac{a^3}{2} + a^3 \right) =$$

$$= \pi \left(\frac{a}{2} - a^2 + \frac{a^3}{2} \right)$$

Detta ska maximeras

$$V'(a) = \pi \left(\frac{1}{2} - 2a + \frac{3a^2}{2} \right) = 0$$

$$1 - 4a + 3a^2 = 0$$

\Leftrightarrow

$$a^2 - \frac{4}{3}a + \frac{1}{3} = 0$$

...

$$\begin{aligned} a &= \frac{2}{3} \pm \sqrt{\left(\frac{2}{3}\right)^2 - \frac{1}{3}} = \frac{2}{3} \pm \sqrt{\frac{1}{9}} = \\ &= \frac{2}{3} \pm \frac{1}{3} \end{aligned}$$

I intervallet $0 < a < 1$ ligger $a = \frac{1}{3}$.

Man verifierar att detta ger max.