$$1 = \pi r^2 h = V \Rightarrow h = \frac{1}{\pi r^2}$$

$$A = 2\pi r^2 + 2\pi r h$$

$$\Rightarrow A = 2\pi r^2 + 2\pi r \frac{1}{\pi r^2}$$

$$= 2\pi r^2 + \frac{2}{r}$$

$$\Rightarrow \frac{d}{dr} A = 4\pi r - \frac{2}{r^2}$$

$$4\pi r - \frac{2}{r^2} = 0$$

$$\Rightarrow r = \frac{1}{\sqrt[3]{2\pi}}$$