$V = 1000 = \pi r^2 h \Rightarrow h = \frac{1000}{\pi r^2}$

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

$= \frac{2000\pi r}{\pi r^2} + 2\pi r^2$

$= \frac{2000}{r} + 2\pi r^2$

$A' = \frac{4\pi r^3 - 2000}{r^2}$

$A' = 0 \Rightarrow \boxed{r = 5.42 \Rightarrow h = 10.84}$