Tin Can Example - Mathematical Notation Only

$$V = \pi r^2 h$$
$$S = 2\pi r^2 + 2\pi r h$$

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

$$\begin{aligned} S &= 2\pi r^2 + 2\pi r h \\ &= 2\pi r^2 + 2\pi r \left(\frac{V}{\pi r^2}\right) \\ &= 2\pi r^2 + \frac{2V}{r} \end{aligned}$$

$$\begin{aligned} 0 &= \frac{dS}{dr} \\ &= 4\pi r - 2Vr^{-2} \end{aligned}$$

$$
\begin{aligned}
4\pi\tilde{r} - \frac{2V}{\tilde{r}^2} &= 0 \\
4\pi\tilde{r} &= \frac{2V}{\tilde{r}^2} \\
4\pi\tilde{r}^3 &= 2V \\
\tilde{r}^3 &= \frac{V}{2\pi} \\
\tilde{r} &= \sqrt[3]{\frac{V}{2\pi}}
\end{aligned}
$$

$$
\begin{aligned}
\tilde{r} &= \sqrt[3]{\frac{V}{2\pi}} \\
&= \sqrt[3]{\frac{\pi\tilde{r}^2 h}{2\pi}} \\
&= \sqrt[3]{\frac{\tilde{r}^2 h}{2}}
\end{aligned}
$$

$$
\begin{aligned}
\tilde{r} &= \sqrt[3]{\frac{\tilde{r}^2 h}{2}} \\
\tilde{r}^3 &= \frac{\tilde{r}^2 h}{2} \\
2\tilde{r}^3 &= \tilde{r}^2 h \\
2\tilde{r} &= h
\end{aligned}
$$