

49 We must solve the system of nonlinear equations.

$$\pi r^2 h = 50$$

$$2\pi r h = 65$$

Solving each equation for h results in the following.

$$\pi r^2 h = 50 \Rightarrow h = \frac{50}{\pi r^2}$$

$$2\pi r h = 65 \Rightarrow h = \frac{65}{2\pi r}$$

Graph $Y_1 = 50/(\pi X^2)$ and $Y_2 = 65/(2\pi X)$. Their graphs intersect near $(1.538, 6.724)$.

See *Figure 49*. A cylinder with approximate measurements of $r \approx 1.538$ inches and $h \approx 6.724$ inches has a volume of 50 cubic inches and a lateral surface area of 65 square inches.

$[0, 4, 1]$ by $[0, 20, 1]$

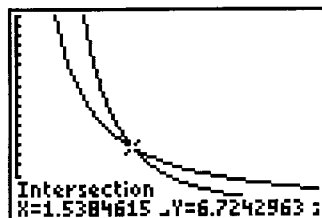


Figure 49