

53, 57, 58, 60, 62, 63,

~~78, 270~~ ~~40, 49, 54~~ eliminated

57. $w = \text{width}$ $l = 2w - 2$

$$P = 2w + 2l$$

$$2w + 2(2w - 2) < 200$$

$$2w + 4w - 4 < 200$$

$$6w - 4 < 200$$

$$6w - 204 < 0 \dots$$

$$6(w - 34) < 0$$

$$\begin{array}{c} \leftarrow N \quad P \\ \# \quad \quad \quad \# \\ \quad \quad \quad 34 \end{array}$$

$$1 < w < 34$$

must consider in domain

$$2w - 2 > 0$$

$$2w > 2$$

$$w > 1$$

58. Cost \$0.13 per bar Fixed cost 2000 per week

Bars sell for 0.35

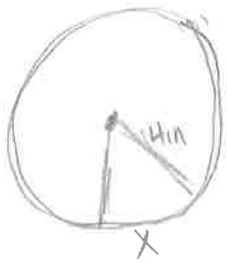
$$\text{profit } 0.35 - 0.13 = 0.22$$

$$\text{per bar} = 0.22x$$

$$0.22x > 2000$$

$$x > 9090.91$$

60.



$$C = 2\pi r$$

$$C = 8\pi - x$$

$$\frac{2\pi r}{2\pi} = \frac{8\pi - x}{2\pi}$$

$$r = 4 - \frac{x}{2\pi}$$



$$V = \frac{1}{3}\pi r^2 h$$

$$h^2 + r^2 = 4^2$$

$$h^2 = 16 - r^2$$

$$h = \sqrt{16 - r^2}$$

$$h = \sqrt{16 - \left(4 - \frac{x}{2\pi}\right)^2}$$

$$V = \frac{1}{3}\pi \left(4 - \frac{x}{2\pi}\right)^2 \left(\sqrt{16 - \left(4 - \frac{x}{2\pi}\right)^2}\right)$$

graph!!

$$V \geq 21$$

$$x \approx 1.68 \text{ m}, x \approx 9.10 \text{ m}$$

$$[1.68, 9.10]$$

62.

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R} = \frac{1}{2.3} + \frac{1}{x}$$

$$2.3x = Rx + 2.3R$$

$$\rightarrow 2.3x = R(x + 2.3)$$

$$R = \frac{2.3x}{x + 2.3}$$

$$R \geq 1.7$$

$$1.7 \geq \frac{2.3x}{x + 2.3}$$

63.