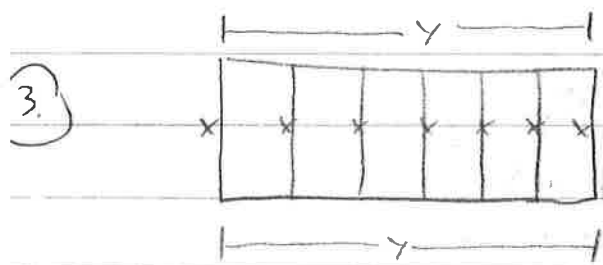


Review Probs

① $S = 2x + 4y$
 $80 = 2x + 4y$
 $80 - 2x = 4y$
 $20 - \frac{1}{2}x = y$
 $y = 10$

$P = xy$
 $P = x(20 - \frac{1}{2}x)$
 $P = 20x - \frac{1}{2}x^2$
 $P' = 20 - x$
 $0 = 20 - x$
 $x = 20$

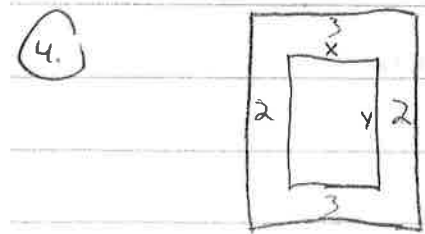


$P = 2y + 7x$
 $800 = 2y + 7x$
 $800 - 7x = 2y$
 $400 - \frac{7}{2}x = y$

$A = xy$
 $A = x(400 - \frac{7}{2}x)$
 $A = 400x - \frac{7}{2}x^2$
 $A' = 400 - 7x$

$y = 200.2$
 $x = 57.1$

$A = 200.2 \times 57.1$
 $A = 11431.4 \div 6 = 1905.2 \text{ m}^2$



$A = (x+6)(x+4)$
 $A = (\frac{100}{x} + 6)(x+4)$
 $A = 100 + 6x + 400x^{-1} + 24$
 $A' = 6 - 400x^{-2}$
 $\frac{400}{x^2} = 6$
 $x = 8.2$

$A = xy$
 $100 = xy$
 $\frac{100}{x} = y$
 $y = 12.2$

Dim: 18.2 in. x 12.2 in

$$5. \quad V = (4-2x)(6-2x)x$$

$$V = (24 - 8x - 12x + 4x^2)x$$

$$V = 4x^3 - 20x^2 + 24x$$

$$V' = 12x^2 - 40x + 24$$

$$x = \cancel{2.5} \quad \boxed{x = .8}$$

$$D = 2.4 \text{ ft} \times 4.4 \text{ ft} \times .8 \text{ ft}$$

$$6. \quad SA = 2x^2 + 4xy \quad V = x^2y$$

$$SA = 2x^2 + 4x\left(\frac{17576}{x^2}\right) \quad 17576 = xy^2$$

$$SA = 2x^2 + 70304x^{-1}$$

$$SA' = 4x - 70304x^{-2}$$

$$y = \frac{17576}{x^2}$$

$$\boxed{y = 26}$$

$$\frac{70304}{x^2} = \frac{4x}{1}$$

$$4x^3 = 70304$$

$$x^3 = 17576$$

$$\boxed{x = 26}$$

$$\text{Dim} = 26 * 26 * 26 \text{ in}$$

$$7. \quad V = \pi r^2 h$$

$$500 = \pi r^2 h$$

$$\frac{500}{\pi r^2} = h$$

$$\boxed{h = 8.6 \text{ cm}}$$

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

$$SA = 2\pi r^2 + 2\pi r \left(\frac{500}{\pi r^2}\right)$$

$$SA = 2\pi r^2 + 1000r^{-1}$$

$$SA' = 4\pi r - 1000r^{-2}$$

$$\frac{1000}{r^2} = 4\pi r$$

$$4\pi r^3 = 1000$$

$$\boxed{r = 4.3 \text{ cm}}$$

9)

$$9x + 4y^2 = 36 \quad (-2, 0)$$

$$4y^2 = 36 - 9x$$

$$y^2 = \frac{36 - 9x}{4}$$

$$y^2 = 11$$

$$y = \pm 3.3$$

$$(-.875, 3.3)$$

$$(-.875, -3.3)$$

$$d = \sqrt{(x+2)^2 + (y-0)^2}$$

$$d^2 = (x+2)^2 + y^2$$

$$d^2 = (x+2)^2 + \left(\frac{36-9x}{4}\right)$$

$$d^{2'} = 2(x+2) - \frac{9}{4}$$

$$0 = 2x + 4 - \frac{9}{4}$$

$$0 = 2x + 1.75$$

$$x = -.875$$

$$A = 2xy$$

$$A = 2x(10 - 2x^2)$$

$$A = 20x - 4x^3$$

$$A' = 20 - 12x^2$$

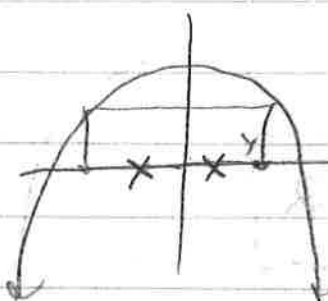
$$12x^2 = 20$$

$$x = 1.3$$

$$A = 2(1.3)(6.6)$$

$$= 17.2 \text{ units}^2$$

10)



$$y = 10 - 2x^2$$

$$y = 6.6$$

$$A = 2(1.3)(6.6)$$

$$= 17.2 \text{ units}^2$$