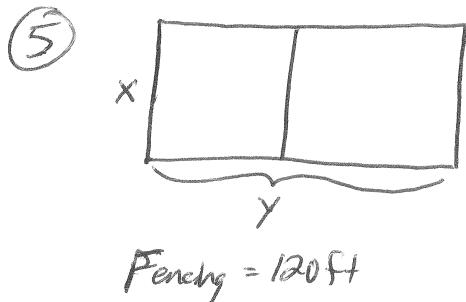


$$A = xy \quad P = 2x + y$$

$$1800 = xy \quad P(x) = 2x + \frac{1800}{x}$$

$$\frac{1800}{x} = y$$



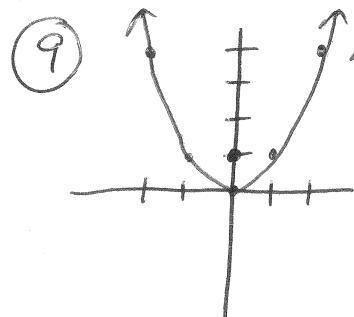
$$P = 3x + 2y \quad A = xy$$

$$120 = 3x + 2y \quad A(x) = x(60 - \frac{3}{2}x)$$

$$120 - 3x = 2y \quad \text{or}$$

$$60 - \frac{3}{2}x = y \quad A(x) = 60x - \frac{3}{2}x^2$$

Fencing = 120 ft
closed interval $[0, 40]$



point closest to $(0, 1)$
closed interval $[-1, 1]$

$$\text{dist} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

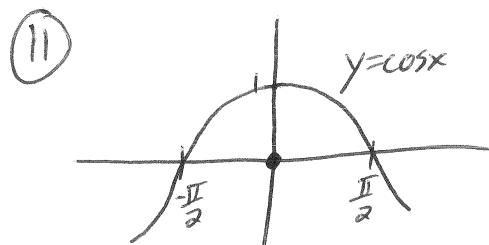
$$= \sqrt{(x - 0)^2 + (y - 1)^2}$$

$$y = x^2$$

$$d(x) = \sqrt{x^2 + (x^2 - 1)^2}$$

$$d(x) = \sqrt{x^2 + x^4 - 2x^2 + 1}$$

$$d(x) = \sqrt{x^4 - x^2 + 1}$$



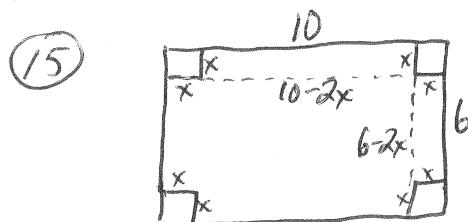
point closest to $(0, 0)$
closed interval $[-\frac{\pi}{2}, \frac{\pi}{2}]$

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

$$y = \cos x$$

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

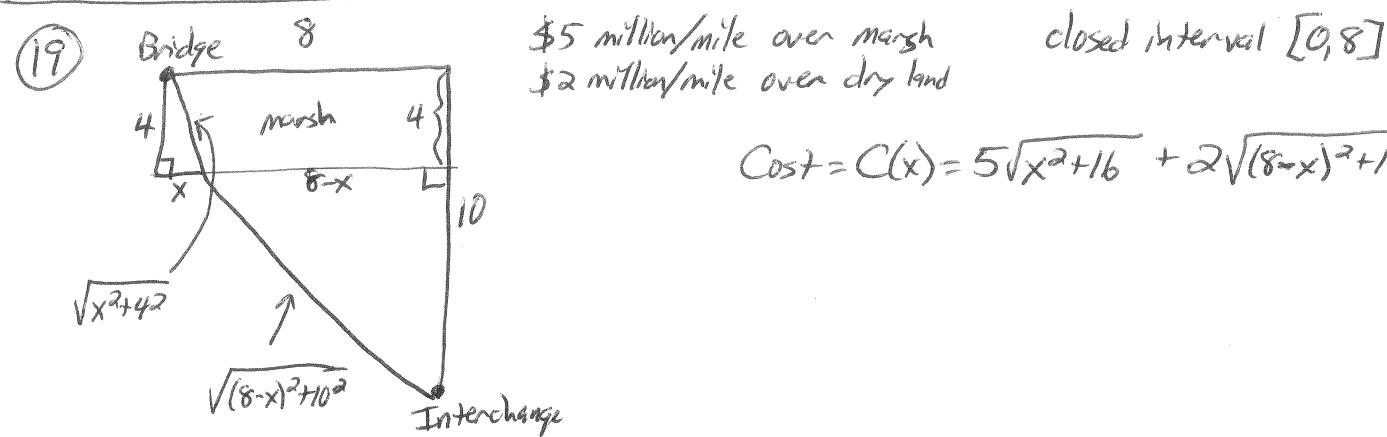
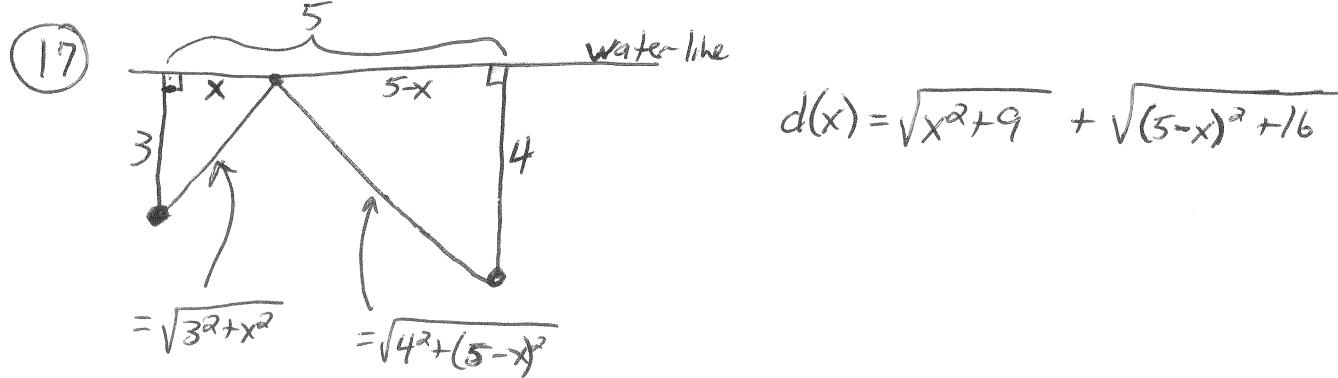
$$d(x) = \sqrt{x^2 + \cos^2 x}$$



closed interval $[0, 3]$

$$V = lwh$$

$$V(x) = x(10 - 2x)(6 - 2x)$$



(20) $\text{Cost} = C(x) = 6\sqrt{x^2+16} + 2\sqrt{(8-x)^2+100}$

(25)

Volume = 12 fl. oz.
 $1 \text{ fl. oz.} = 1,80469 \text{ in}^3$
 $12 \text{ fl. oz.} = 21.65628 \text{ in}^3$

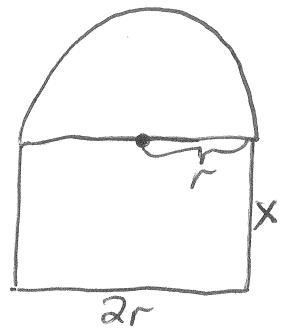
$V = \pi r^2 h$
 $21.65628 = \pi r^2 h$

$\frac{21.65628}{\pi r^2} = h$

Surface Area = $2\pi r^2 + 2\pi r h$
 $Cost = C(r) = 2(2\pi r^2) + 2\pi r \left(\frac{21.65628}{\pi r^2}\right)$

top and bottom twice as thick

(31)



$$\text{Perimeter} = 8 + \pi f +$$

$$\text{Perimeter} = \underbrace{2x}_{\text{rectangle}} + \underbrace{4r}_{\text{semicircle}} + \underbrace{\pi r}_{\text{semicircle}}$$

$$8 + \pi = 2x + 4r + \pi r$$

$$8 + \pi - 4r - \pi r = 2x$$

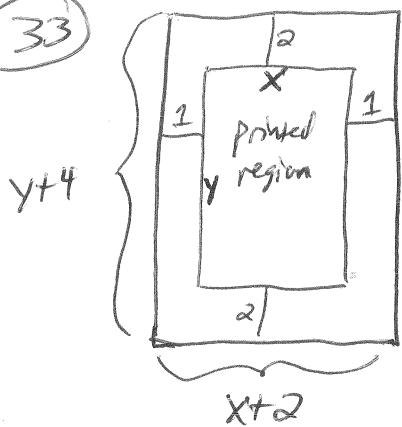
$$\frac{8 + \pi - 4r - \pi r}{2} = x$$

$$\text{Area} = \underbrace{2xr}_{\text{rectangle}} + \underbrace{\frac{\pi r^2}{2}}_{\text{semicircle}}$$

$$A(r) = 2 \left(\frac{8 + \pi - 4r - \pi r}{2} \right) r + \frac{\pi r^2}{2}$$

$$A(r) = (8 + \pi - 4r - \pi r)r + \frac{\pi r^2}{2}$$

(33)



$$\text{Area of printed region} = 92 \text{ m}^2$$

$$92 = xy$$

$$\frac{92}{x} = y$$

$$\text{Area of ad} = (x+2)(y+4)$$

$$A(x) = (x+2)\left(\frac{92}{x} + 4\right)$$