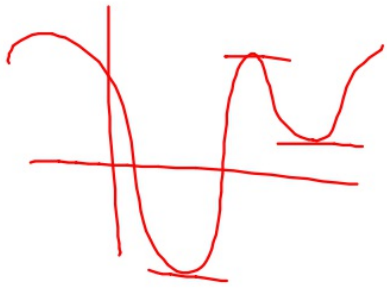
2. x, y

$$\begin{cases} x + 2y = 100 \\ xy = S \end{cases}$$



S max

$x + 2y = 100$

$2y = 100 - x$

$y = 50 - \frac{1}{2}x$

$x(50 - \frac{1}{2}x) = S$

$-\frac{1}{2}x^2 + 50x = S$

$-\frac{1}{2} \cdot 2x + 50 = S'$

$-x + 50 = S' = 0$

$x = 50$

$y = 50 - \frac{1}{2}(50)$

$y = 25$

$P = 80 = 2(x+y)$

$P = 80 = 2x+2y$

$40 = x+y$

$\checkmark \quad 40-x=y$

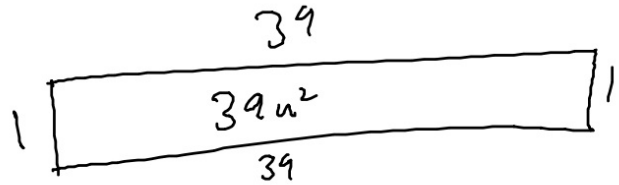
$A = x(40-x)$

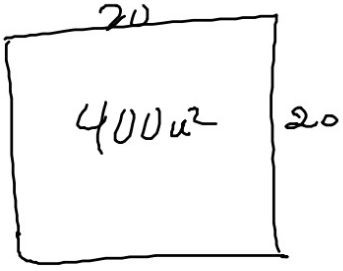
$A = 40x - x^2$

$A' = 40-2x = 0$

$x = 20 \qquad y = 20$

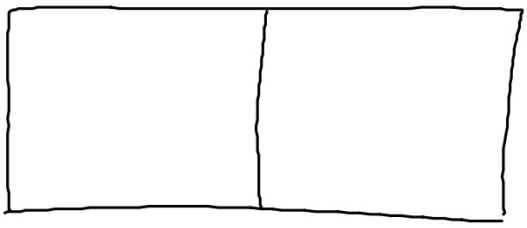
$\boxed{A = 400 \text{ cm}^2}$



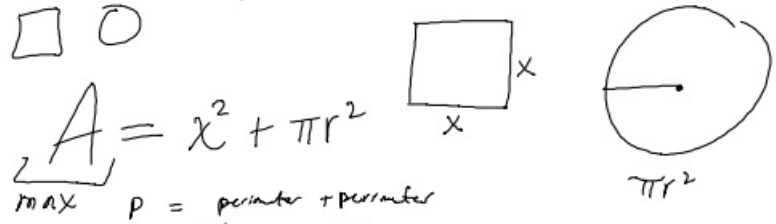


#11

5.)



7.) wire 4ft max total Area.



$A = x^2 + \pi r^2$ (A: max)

P = perimeter + perimeter

$4 = 4x + 2\pi r$

$1 = x + \frac{1}{2}\pi r$

$1 - \frac{1}{2}\pi r = x$

$A = (1 - \frac{1}{2}\pi r)^2 + \pi r^2$

$(x+3)^2 = x^2+9$

$A' = 2(1 - \frac{1}{2}\pi r)(-\frac{1}{2}\pi) + 2\pi r$

$A' = -1(1 - \frac{1}{2}\pi r)\cdot\pi$

$2(x+7)3$

$6(x+7)$

$-\pi(1 - \frac{1}{2}\pi r)$

$A' = -\pi + \frac{1}{2}\pi^2 r + 2\pi r$

$0 = -\pi + \frac{1}{2}\pi^2 r + 2\pi r$

$\frac{0}{\pi} = \frac{\pi(-1 + \frac{1}{2}\pi r + 2r)}{\pi}$

$0 = -1 + \frac{1}{2}\pi r + 2r$

$1 = \frac{1}{2}\pi r + 2r$) times 2

$2 = \pi r + 4r$

$2 = r(\pi + 4)$

$3x + 2x$

$x(3+2)$

$\frac{2}{\pi+4} = r$

$0.280 \approx r$

$C = 2\pi r$

$C = 2 \cdot \pi \cdot (0.280\ldots)$

$C = 1.75$