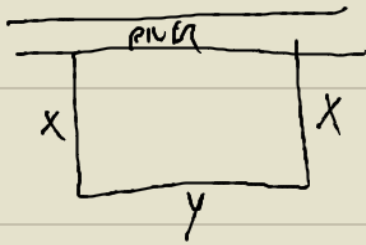


3.



$$\text{AREA} = xy$$

$$\text{FENCING} = x + x + y = 2x + y$$

$$100000 = xy$$

$$\bullet \frac{100000}{x} = y$$

MINIMIZE FENCING

$$F = 2x + y$$

$$F = 2x + \frac{100000}{x}$$

$$F = 2x + 100000x^{-1}$$

$$\frac{dF}{dx} = 2 - 100000x^{-2}$$

$$= \frac{2}{1} - \frac{100000}{x^2}$$

$$\frac{dF}{dx} = \frac{2x^2}{x^2} - \frac{100000}{x^2}$$

$$= \frac{2x^2 - 100000}{x^2} \leftarrow$$

$$2x^2 - 100000 = 0$$

$$x^2 = 0$$

$$2x^2 = 100000$$

~~$$x = 0$$~~

$$\frac{2x^2}{2} = \frac{100000}{2}$$

$$x^2 = 50000$$

$$x = \pm \sqrt{50000}$$

$$x = \sqrt{5 \cdot 100 \cdot 100}$$

$$x = 100\sqrt{5}$$

(223.6)

	$x = 1$	$x = 300$
T.C.	$\frac{2x^2 - 100000}{x^2}$	$\frac{2x^2 - 100000}{x^2}$
	$\frac{2(1)^2 - 100000}{1}$	$\frac{2(300)^2 - 100000}{1}$
	+	+
	/	/
	min	min

So MIN AT  $x = 100\sqrt{5}$

$$y = \frac{100000}{x} = \frac{100000}{100\sqrt{5}} = \frac{1000}{\sqrt{5}} = \frac{1000\sqrt{5}}{\sqrt{5}\sqrt{5}} = \frac{1000\sqrt{5}}{5} = 200\sqrt{5}$$

$$\begin{aligned} x &= 100\sqrt{5} \\ y &= 200\sqrt{5} \end{aligned}$$