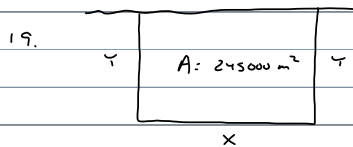


3.6 Optimization Problems
(Day 2)

Objective: 1. Solve Optimization Problems



Primary Equation

$$F = x + 2y$$

Secondary Equation

$$A = xy$$

$$\begin{aligned} 245000 &= xy \\ \frac{245000}{x} &= y \end{aligned}$$

$$F = x + 2\left(\frac{245000}{x}\right)$$

$$f = x + \frac{490000}{x}$$

$$f' = 1 - \frac{490000}{x^2} \quad x \neq 0$$

$$0 = 1 - \frac{490000}{x^2}$$

$$\frac{490000}{x^2} = 1$$

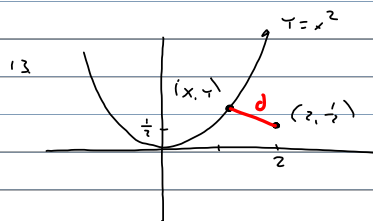
$$490000 = x^2$$

$$y = \frac{245000}{700}$$

$$700 = x$$

$$y = 350$$

700 m x 350 m



Primary Equation

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

Secondary Equation

$$y = x^2$$

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

I CAN DROP THE $\sqrt{\quad}$

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

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

$$d' = 2x-4 + 4x^3-2x$$

$$d' = 4x^3-4$$

$$0 = 4x^3-4$$

$$1 = x$$

$$x=1 \quad y=x^2 \quad \text{thus } y=1$$

THE POINT IS (1, 1)

HW Pg 262 # 3, 15, 17, 21, 25

