2.5 & 2.6 Optimization

Ex. 1: The difference of two numbers is 50. Find the numbers so that the product is minimum.

Ex. 2: A manufacturer wants to design an open box that has a square base and its surface area is 108 in^2. Find the dimensions that maximizes volume.

Ex. 3: The demand function for widgets is $p = 50/\sqrt{x}$. If the fixed cost is \$500 and the variable cost is \$0.50.

a) Find $R(x)$, $C(x)$, $P(x)$

b) Find $\dfrac{P(1201) - P(1200)}{1201 - 1200}$ — h or $\Delta x = 1$

c) Find marginal profit at $x = 1200$. — h or $\Delta x \approx 0$

d) Find max profit.

e) What price creates max profit?

Ex. 4: A cannery needs to design a can with minimum surface area to save tin and money. What must be the dimensions of the can if the volume of the can is $2\pi^4$ cubic inches? ($\approx 194.8\ in^3$)