Graphing & Optimizing Profit
5.3 – Maximum Profit

$price\ function = p(x)$
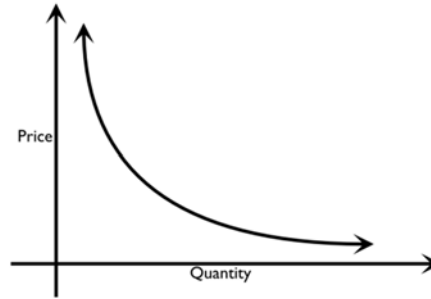
$Quantity = x$

$R(x) = p(x) \cdot x$

$C(x) = (Variable\ cost)x + (fixed\ cost)$

$P(x) = R(x) - C(x)$

Price and quantity are inversely related.

At maximum profit:
    (Marginal Revenue) = (Marginal Cost)

Ex A: Maximizing a Company's Profit
It costs Teleco Inc $70 to produce each phone, and fixed costs (rent and other costs that do not depend on the amount of production) are $100 per week. The company's price function is $p(x) = 270 - 10x$, where p is the price at which exactly x phones will be sold.

For what price should they be sold?

What is the company's maximum profit?

How many phones should be produced each week to maximize profit?

Sentence Answer:

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Ex B: Maximizing Profit from MC and MR.

Jim's Discount Lion Cage's CEO, Bair Leah Live, hires an accountant to find his marginal cost and marginal revenue functions. The account find $MC(x) = 8000$ and $MR(x) = 22,000 - 140x$, where x is the number of lion cages produced and sold per month. Find the maximum number of lion cages Bair Leah Live should sell to maximize his profit.