Math 131 Quiz 1 (B)

Name:.....ID#:.....

Q.1: A company makes car stereos. The manufacturing cost for each stereo is \$45. The company has fixed costs of \$4150 per month. Find the number of units of the product that company should make for a total cost of \$10,000.

Sol: Let the number of units be $= x$, then $45x + 4150 = 10000$ gives $x = (10000 - 4150)/45 = 130$.

Q.2: A manufacturer has 4000 units of product x in stock and is now selling it at \$10 per unit. Next month the unit price will increase by \$2. The manufacturer wants the total revenue received from the sale of the 4000 units to be no less than \$45,000. What is the maximum number of units that can be sold this month?

Sol: Let the number of units sold in this month $= x$, then

$10x + 12(4000 - x) > 45000$ gives $x < (48000 - 45000)/2 = 1500$

So the maximum number of units the company should sell in this month is 1499.

Q.3 Suppose that a manufacturer will place 1000 units of a product on the market when the price is \$10 per unit, and 1400 units when the price is \$12 per unit. Find the supply equation for the product assuming the price p and quantity q are linearly related.

Sol: We have the two points $(1000, 10)$ and $(1400, 12)$

Slope of the function is $m = \dfrac{10 - 12}{1000 - 1400} = \dfrac{1}{200}$ and $p = f(q) = \dfrac{1}{200}q + c$

But $f(1000) = \dfrac{1}{200}(1000) + c = 10$ gives $c = 5$

So $p = f(q) = \dfrac{1}{200}q + 5$

OR $q = f(p) = 200p - 1000$ if we consider points as $(10, 1000)$ and $(12, 1400)$.

Q.4: Find a general linear equation of the line that passes through point (1, -2) and has slope 3.

Sol: $y + 2 = 3(x - 1)$ or $y = 3x - 5$.