

1. (1 pt) Find the point on the line $-3x + 6y + 2 = 0$ which is closest to the point $(1, 4)$.

(_____, _____)

2. (1 pt) For the given cost function

$C(x) = 67600 + 700x + x^2$ find:

a) The cost at the production level 1300 _____

b) The average cost at the production level 1300 _____

c) The marginal cost at the production level 1300 _____

d) The production level that will minimize the average cost _____

e) The minimal average cost _____

3. (1 pt) A manufacture has been selling 1550 television sets a week at 360 each. A market survey indicates that for each 17

rebate offered to a buyer, the number of sets sold will increase by 170 per week.

a) Find the demand function $p(x)$, where x is the number of the television sets sold per week.

$p(x) =$ _____

b) How large rebate should the company offer to a buyer, in order to maximize its revenue? _____

c) If the weekly cost function is $93000 + 120x$, how should it set the size of the rebate to maximize its profit? _____

4. (1 pt) If 1600 square centimeters of material is available to make a box with a square base and an open top, find the largest possible volume of the box.

Volume = _____ cubic centimeters.

5. (1 pt) A rancher wants to fence in an area of 1000000 square feet in a rectangular field and then divide it in half with a fence down the middle parallel to one side. What is the shortest length of fence that the rancher can use? _____