**MATH 422** **Week 14 Quiz** **Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Directions:**  Answer each question to the best of your ability. **Show your reasoning** and/or process used to answer the question(s) where it is appropriate. A calculator will be necessary for this quiz. You are not permitted to use a device that has internet capability. Not all questions are worth the same number of points. Please look at point values. Total points = 15.

1. (2 pts)

If , find . Then find the slope of the curve at x = -3

 

2. (4 pts)

The total cost (in dollars) to produce units of a good is given by the function:

units?  
  
Total cost = $   
  
B. What is the marginal cost function?

C. If 7200 items have already been made, what is the cost of making the *next* item?  
  
Cost of the item = $   
  
D. What is the correct interpretation for the marginal cost?

1. When 7200 units are produced, the cost of additional units is approximately $50 per unit.
2. The average cost to make 7200 units is about $50 per unit.
3. When 7200 units are produced, it cost $43,000 plus the fixed cost to make them.
4. When the marginal cost is $50, we conclude that 7200 units are produced at that price.

3. (4 pts)

The cost of producing units of stuffed alligator toys is

A. Fill in the table at the right:

|  |  |
| --- | --- |
| Quantity (q) | Total cost (C) |
| 0 |  |
| 250 |  |
| 500 |  |
| 750 |  |
| 1000 |  |

B. What is the *fixed cost* for producing these toys?

C. What is the *average cost* for producing each toy if 750 toys are made?

1. If 750 toys were made, how much would it cost to produce one more toy?

4. (2 pts)

Suppose a product's revenue function is given by , where is in dollars and is units sold. Find the marginal revenue at units.

5. (3 pts)

Suppose a demand function is given by , where is thousands of units produced and is market price in dollars for a barrel of crude oil. Compute the following, showing all calculations clearly.  
  
A) Write a formula for revenue as a function of q (quantity):  
  
R(q) =   
  
B) Given that and current production is at 200,000 barrels, how much revenue loss would there be to increase production to 201,000? (from q = 200 to q = 201)

C) According to this model, what is the price of crude oil when production is at 200,000 barrels?

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**Key - Form 1**

1. ~ ~
2. -36
3. -21 ~ -21 ~ -23
4. 1 ~ 2
5. 92680 ~ 6.9
6. 338 ~ 12000 ~ 22.108
7. 10092 ~ 4116 ~ 5976
8. 450
9. 12
10. 63
11. 11500 ~ 11512.002 ~ 12.002 ~ 12 ~ A: When 500 units are produced, the cost of additional units is approximately 12 per unit.

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