

MCR 3U

Name: \_\_\_\_\_

Max / Min Assignment

Method #1 – Factoring and Using the Roots

Worked With \_\_\_\_\_

Method #2 – Partial Factoring

Method #3 – Completing the Square

Worked With \_\_\_\_\_

Method #4 – The Formula

1. Given the revenue function  $R(x) = -3x^2 + 74x$ , and the cost function  $C(x) = 12x - 559$ , where  $x$  is the number of items sold in thousands, determine;

Method  
Used

#

- a. The profit function  $P(x)$

ANSWER \_\_\_\_\_

- b. The value of  $x$  that maximizes profit

ANSWER \_\_\_\_\_

- c. The maximum profit.

ANSWER \_\_\_\_\_

Method  
Used

#

2. The profit function for a certain product is given by  $P(x) = -5(x - 7)(x - 13)$ , where  $x$  is the number of items sold in thousands. What quantity of items sold will produce the maximum profit?

ANSWER \_\_\_\_\_

Method  
Used

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3. The cost per day of producing widgets at Company XYZ is modeled by the function  $C(x) = 0.04x^2 - 8.504x + 25302$ , where  $C(x)$  is the cost per day in dollars and  $x$  is the number of widgets produced in thousands. Find the daily production level that will minimize your costs.

ANSWER \_\_\_\_\_

Method  
Used

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4. The lifeguard at a public beach has 700 m of rope available to create a rectangular swimming area. The shoreline will form one side of the rectangle. Determine the dimensions of the rectangle that will produce the largest swimming area. State what this area will be.

ANSWER \_\_\_\_\_

ANSWER \_\_\_\_\_

Method  
Used

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5. A CD company has been selling 1200 computer games CDs per week at \$18 each. Data indicates that for each \$1 increase, there will be a loss of 40 sales per week. If it costs \$10 to produce each CD, what should the selling price be in order to maximize the profit?

ANSWER \_\_\_\_\_

MCR 3U  
Max / Min Assignment

Name: Sol'n.

- Method #1 - Factoring and Using the Roots
- Method #2 - Partial Factoring
- Method #3 - Completing the Square
- Method #4 - The Formula

Worked With \_\_\_\_\_

Worked With \_\_\_\_\_

1. Given the revenue function  $R(x) = -3x^2 + 74x$ , and the cost function  $C(x) = 12x - 559$ , where  $x$  is the number of items sold in thousands, determine; *No units on Revenue.*  
 \* Revenue is dollars in thousands!

Method Used  
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a. The profit function  $P(x)$

ANSWER  $P(x) = -3x^2 + 62x + 559$

b. The value of  $x$  that maximizes profit

ANSWER  $x = \frac{31}{3}$  OR  $x = 10,333$

c. The maximum profit.

ANSWER  $\$879,333.33$   $\$879.3$   
 accept both

Method Used  
#

2. The profit function for a certain product is given by  $P(x) = -5(x-7)(x-13)$ , where  $x$  is the number of items sold in thousands. What quantity of items sold will produce the maximum profit?

ANSWER 10,000

Method Used  
#

3. The cost per day of producing widgets at Company XYZ is modeled by the function  $C(x) = 0.04x^2 - 8.504x + 25302$ , where  $C(x)$  is the cost per day in dollars and  $x$  is the number of widgets produced in thousands. Find the daily production level that will minimize your costs.

ANSWER 106,300

Method Used  
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4. The lifeguard at a public beach has 700 m of rope available to create a rectangular swimming area. The shoreline will form one side of the rectangle. Determine the dimensions of the rectangle that will produce the largest swimming area. State what this area will be.

ANSWER  $l = 350$   $w = 175$

ANSWER  $A = 61,250 \text{ m}^2$

Method Used  
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5. A CD company has been selling 1200 computer games CDs per week at \$18 each. Data indicates that for each \$1 increase, there will be a loss of 40 sales per week. If it costs \$10 to produce each CD, what should the selling price be in order to maximize the profit?

ANSWER \$29