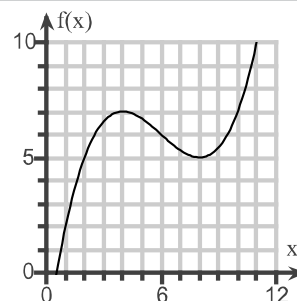


Student: \_\_\_\_\_  
Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Instructor: Dan Yasaki  
Course: MAT 120 (Summer 2013)  
Book: Barnett: Calculus for Business,  
Economics, Life/Social Sciences, 12e

Assignment: 5.5-5.6 Quiz

1. For the graph of  $y = f(x)$  shown on the right, find the absolute minimum and the absolute maximum over the interval  $[6, 10]$ .



Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The absolute minimum is at  $f(\square) = \square$ .  
 B. There is no absolute minimum.

Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The absolute maximum is at  $f(\square) = \square$ .  
 B. There is no absolute maximum.

2. Find the absolute maximum and minimum, if either exists, for the following function.

$$f(x) = 3x^3 + 2x$$

Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The absolute maximum is  $f(\square) = \square$ , and the absolute minimum is  $f(\square) = \square$ .  
 B. The absolute maximum is  $f(\square) = \square$ , but there is no absolute minimum.  
 C. The absolute minimum is  $f(\square) = \square$ , but there is no absolute maximum.  
 D. There is no absolute maximum or absolute minimum.

3. Find the absolute minimum value on  $[0, \infty)$  for  $f(x) = 3x^2 - 18x + 9$ .

Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The absolute minimum occurs at  $f(\square) = \square$ .  
 B. There is no absolute minimum.

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4. Find the absolute minimum value on  $[0, \infty)$  for  $f(x) = (x + 12)(x - 6)^2$ .  
Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The absolute minimum occurs at  $f(\square) = \square$ .  
 B. There is no absolute minimum.

5. Find the absolute maximum value on  $(0, \infty)$  for  $f(x) = 17 - 8x - \frac{8}{x}$ .  
Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The absolute maximum occurs at  $f(\square) = \square$ .  
 B. There is no absolute maximum.

6. Find two numbers whose sum is 18 and whose product is a maximum.  
The two numbers are .  
(Simplify your answer. Use a comma to separate answers as needed.)

7. Find the dimensions of a rectangle with an area of 25 square feet that has the minimum perimeter.  
The dimensions of this rectangle are  ft.  
(Simplify your answer. Use a comma to separate answers as needed.)

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8. A company manufactures and sells  $x$  cellphones per week. The weekly price-demand and cost equations are given below.

$$p = 500 - 0.5x \text{ and } C(x) = 25,000 + 135x$$

(A) What price should the company charge for the phones, and how many phones should be produced to maximize the weekly revenue? What is the maximum weekly revenue?

The company should produce  phones each week at a price of \$.

(Round to the nearest cent as needed.)

The maximum weekly revenue is \$. (Round to the nearest cent as needed.)

(B) What price should the company charge for the phones, and how many phones should be produced to maximize the weekly profit? What is the maximum weekly profit?

The company should produce  phones each week at a price of \$.

(Round to the nearest cent as needed.)

The maximum weekly profit is \$. (Round to the nearest cent as needed.)

9. A fence is to be built to enclose a rectangular area of 1250 square feet. The fence along three sides is to be made of material that costs \$4 per foot. The material for the fourth side costs \$12 per foot. Find the dimensions of the rectangle that will allow for the most economical fence to be built.

The short side is  ft and the long side is  ft.

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**Assignment:** 5.5-5.6 Quiz

1. A, 8, 5  
A, 10, 7

2. D

3. A, 3, - 18

4. A, 6, 0

5. A, 1, 1

6. 9,9

7. 5,5

8. 500  
250  
125,000.00  
365  
317.50  
41,612.50

9. 25  
50