

Chapter 5 Review Calculus

Find the intervals of increasing and decreasing for the following functions. Then locate and label the relative max/min.

1. $f(x) = x^3 - \frac{3}{2}x^2$

2. $f(x) = x^2 + 8x + 10$

3. $f(x) = \frac{1}{2}x - \sin x$ $[0, 2\pi]$

Find the point(s) of inflection in addition to the relative max/min for the following functions.

4. $f(x) = x^3 - 6x^2 + 12x - 8$

5. $f(x) = \frac{1}{4}x^4 - 2x^2$

Given the function, find the following information.

6. $f(x) = x^3 - 3x^2$

Intervals of increasing _____

Intervals of decreasing _____

Intervals of concave up _____

Intervals of concave down _____

Relative Maxima _____

Relative Minima _____

Point(s) of Inflection _____

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Find the absolute max/min of the following functions:

7. $f(x) = -x^2 + 3x$ $[0, 3]$

8. $f(x) = x^3 + 6x^2$ $[-6, 1]$

9. $f(x) = \cos x$ $[0, 2\pi]$

10. Find the c guaranteed by the Mean-Value Theorem

$$f(x) = x^3 - x^2 - 2x \quad [-1, 1]$$

11. Find the c guaranteed by Rolle's Theorem

$$f(x) = x^3 - 6x^2 + 11x - 6 \quad [1, 3]$$

12. You have 900 feet of fencing for your yard. You want to maximize the area of your yard. What will the dimensions be? What is the maximum area?