Increasing and Decreasing Functions

1. Find the critical numbers of the function (similar to p.175 #5-10)

$$y = x^3 - 48x$$

2. Find the critical numbers of the function (similar to p.175 #5-10)

$$y = x^3 - 2x^2 + x + 11$$

3. Find the critical numbers and the open intervals on which the function is increasing or decreasing. Then use a graphing utility to verify your results (similar to p.175 #16)

$$y = 3x^2 - 12x + 1$$

4. Find the critical numbers and the open intervals on which the function is increasing or decreasing. Then use a graphing utility to graph the function (similar to p.175 #28)

$$y = \sqrt{16 - x^2}$$

5. Find the critical numbers and the open intervals on which the function is increasing or decreasing. Then use a graphing utility to graph the function (similar to p.175 #20)

$$y = \frac{1}{4}x^4 - \frac{1}{3}x^3 - 3x^2$$

6. Find the critical numbers and the open intervals on which the function is increasing or decreasing. Then use a graphing utility to graph the function (similar to p.175 #34)

$$f(x) = \frac{3x^2}{x^2 - 9}$$

7. Find the critical numbers and the open intervals on which the function is increasing or decreasing. Then use a graphing utility to graph the function (similar to p.175 #32)

$$y = x^2\sqrt{x-2}$$

8. Find the critical numbers and the open intervals on which the function is increasing or decreasing (Hint: Check for discontinuities) (similar to p.176 #35)

$$f(x) = \frac{x-7}{x+2}$$

9. Find the critical numbers and the open intervals on which the function is increasing or decreasing (Hint: Check for discontinuities) (similar to p.176 #39)

$$f(x) = \begin{cases} -3x, & x \le 1 \\ x^2 - 4x + 7, & x > 1 \end{cases}$$