

4.3 Increasing and Decreasing Functions and the First Derivative Test

Name:

Date: June 8, 2015

P 10. Identify the open intervals on which $h(x) = 12x - x^3$ is increasing or decreasing.

P 12. Identify the open intervals on which $y = x + \frac{9}{x}$ is increasing or decreasing.

P 14. Identify the open intervals on which $h(x) = \cos \frac{x}{2}$ on $0 < x < 2\pi$ is increasing or decreasing.

P 16. Identify the open intervals on which $f(x) = \sin^2 x + \sin x$ on $0 < x < 2\pi$ is increasing or decreasing.

P 20. Identify the open intervals on which $f(x) = \frac{\ln x}{\sqrt{x}}$ is increasing or decreasing.

P 30. Determine the relative extrema of $f(x) = x^4 - 32x + 4$

P 42. Determine the relative extrema of

$$f(x) = \begin{cases} 2x + 1, & x \leq -1 \\ x^2 - 2, & x > 0 \end{cases}$$

P 48. Determine the relative extrema of

$$f(x) = x \arctan x$$

P 54. Determine the relative extrema of

$$f(x) = \ln(2 - \ln x)$$