

Basic Applications of the Derivative

Directions: Find all local maxima and minima. Indicate if any are absolute extrema as well. List all intervals on which the function is increasing and decreasing. Find all points of inflection. List all intervals on which the function is concave up and concave down.

1. $f(x) = x^2 - 8x + 16$

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

3. $f(x) = \ln(x^2 - 1)$

4. $f(x) = x^4 - 18x^2$

5. $f(x) = \sin x + \cos x; [0, 2\pi]$