kCalculus 12
8-5 The First Derivative Test

1. Find the local maximum and minimum values of f.

a) $f(x) = 3x^2 - 4x + 13$

b) $f(x) = x^3 - 12x - 5$

c) $g(x) = 2 + 5x - x^5$

d) $y = x^4 - x^3$

2. Find the critical numbers, intervals of increase and decrease, and local maximum and minimum values of the function. Then use this information sketch the graph of f.

a) $f(x) = 2 + 6x - 6x^2$

b) $g(x) = 1 + 3x^2 - 2x^3$

c) $g(x) = 3x^4 - 16x^3 + 18x^2 + 1$

d) $h(x) = 3x^5 - 5x^3$

3. Find the absolute maximum or minimum value of the function.

a) $f(x) = 27 + x - x^2$

b) $f(x) = 3 - \dfrac{1}{\sqrt{x^2+1}}$

c) $g(x) = \dfrac{x^2 - 1}{x^2 + 1}$

d) $g(x) = \dfrac{x^2 - x + 1}{x^2 + 1}$