Hwk #1 Extrema, Rolle's Theorem, Mean Value Theorem   Date_____

For each problem, find all points of absolute minima and maxima on the given interval (Check CNs, and BOTH endpoints!)

1) $f(x) = -x^3 + 2x^2 - 4;$ $[-1, 2]$

2) $f(x) = x^3 - 5x^2 + 7x + 1;$ $[0, 2]$

3) $f(x) = \dfrac{9x}{x^2 + 9};$ $[-2, 1]$

For each problem, determine if Rolle's Theorem can be applied. If it can, find all values of c that satisfy the theorem. If it cannot, explain why not.

4) $y = \dfrac{x^2 - 1}{3x};$ $[-1, 1]$

5) $y = \dfrac{x^2 - 9}{-x + 4};$ $[-3, 3]$

For each problem, determine if the Mean Value Theorem can be applied. If it can, find all values of c that satisfy the theorem. If it cannot, explain why not.

6) $y = \dfrac{-x^2 + 1}{3x};$ $[1, 4]$

7) $y = -\dfrac{x^2}{3x + 3};$ $[-2, 2]$