CALCULUS NAME _____

1. Find the extrema of $f(x) = 4x^3 - 6x^2 - 144x - 1$ on the closed interval $[-3, 6]$.

2. Find the relative extrema of $f(x) = -3x^5 + 5x^3$ using the second derivative test. Tell the intervals on which the function is increasing or decreasing.

3. Discuss the concavity of $f(x) = \frac{2}{1-x}$.

4. Find any points of inflection for $f(x) = x^4 - 4x^3$.

5. Determine whether Rolle's Theorem can be applied to $f(x)$ on the indicated interval. If Rolle's Theorem can be applied find all values of c in the interval such that $f'(x) = 0$.

   $f(x) = \frac{x}{(x+2)^2}$ on the interval $[-2, 0]$.

6. Find all relative extrema and points of inflection, discuss concavity and increasing and decreasing intervals:

   $f(x) = \sin x + \cos x \quad 0 \leq x \leq 2\pi$