Lab: First and Second Derivatives and Roots

Report for Team # _____ **Section _____**

Names	**Signatures**
_____	_____
_____	_____
_____	_____
_____	_____

1. Attach a copy of the completed "Graphing Page." As requested in the lab instructions, be sure to indicate (to two decimal place accuracy) all roots of f, f', and f'', all extrema of f and f', and all inflection points of f. And don't forget the lightly sketched vertical lines requested in step 5 of Part IV.

2. Complete the following statements:

Maximum/Minimum Value Theorem:

If the function f has a local minimum or a local maximum at $x = c$, and if $f'(c)$ exists, then $f'(c) =$ _____ .

Rolle's Theorem:

If $f(r_1) = 0$ and $f(r_2) = 0$ and if f is differentiable on the interval $[r_1, r_2]$, then f' _____ .

3. If g' has exactly k roots, how many roots could g have? Explain your answer and make a few sketches to illustrate your explanation.

4. Based upon what is given in the following statement, in the space to the right make a sketch of the function $V(t)$.

Although the value of the stock continues to decrease, the rate of its decrease bottomed out a few days ago and the outlook is much brighter now. Let $V(t)$ be the value of the stock.