Exam 3 Topic List

Mean Value Theorem (MVT)

- Use the conditions of the MVT to verify that the MVT applies and to show that the MVT does not apply to a function on a given interval
- If the MVT applies, find the value of *c* guaranteed by the conclusion of the MVT

Increasing/Decreasing Intervals and Intervals of Concavity

- Use the first derivative to determine intervals of increase and decrease for a function
- Use the second derivative to determine intervals of concavity for a function

Relative Extreme Values and Points of Inflection

- Find points on a curve corresponding to relative extreme values using the First Derivative Test
- Find points on a curve corresponding to relative extreme values using the Second Derivative Test
- Find points of inflection on a curve

L'Hôpital's Rule

- Directly apply L'Hôpital's Rule to limits with the indeterminate forms $\frac{0}{0}$ and $\frac{\infty}{\infty}$
- Re-write limit expressions and then apply L'Hôpital's Rule to limits with the indeterminate forms $0 \cdot \infty$ and $\infty - \infty$
- Re-write limit expressions using natural log and then apply L'Hôpital's Rule to limits with the indeterminate forms 0^0, ∞^0, and 1^∞

Curve Sketching

- Find *x*- and *y*-intercepts of a function
- Find horizontal and vertical asymptotes of a function
- Bring it all together: Sketch a curve for a given function using <u>everything</u> we learned in this unit

** This entire exam will be <u>non-calculator</u>.