Critical Thinking Questions (CTQs)

1. Explain how the **chain rule** is used in implicit differentuiation. L'Hôpital

2. Write a word problem starring YOU that requires the use of related rates to solve. Then explain how to solve the problem.

3. What does it mean to say that $\lim_{x\to\infty} f(x) = L$ and $\lim_{x\to a} f(x) = \infty$?

4. Explain two different methods (the First Derivative Test and the Second Derivative Test) for finding relative extrema. Which do you prefer and why?

5. Explain how to use the Second Derivative Test to determine intervals of concavity for a function $f(x)$.

6. When looking at the graph of f', explain how to find inflection points of f? When looking at the graph of f', explain how to find local extrema for f.

7. Explain how to find absolute extrema on (a) a closed interval and (b) an open interval.

8. Write a word problem starring YOU that requires the use of optimization to solve. Then explain how to solve the problem.