Part I (due at the beginning of class Tuesday, October 7)

Write down what you remember about derivatives: how is the derivative defined, what do we use the derivative for, what rules do you remember, what parts of derivatives did you find tricky, etc.

Part II: Problems (due at the beginning of class Tuesday, October 7)

1. The number of gallons of gas in Janet's new station wagon t days after she bought it is given by the function $g(t)$. When she purchased the station wagon one year ago, the tank had 19 gallons of gas in it. Today, she ran out of gas.

   (a) Explain in practical terms what the Extreme Value Theorem says about this situation.

   (b) Explain in practical terms what the Intermediate Value Theorem says about this situation.

2. At 8 AM on Saturday, Mark begins running up the side of a mountain for a quick overnight camping trip. The next morning, he starts running down the mountain, also at 8 AM. It takes him an hour to run up the mountain but only 40 minutes to run down. At some point on the way down the mountain, Mark looks at his watch and thinks, "I was at this spot at this exact time yesterday morning!" Is Mark correct? Carefully explain why or why not.

3. True or false? If true, carefully explain why; if false, give an explained counterexample.

   (a) If $f(x) = g(x)$ for all real numbers other than $x = 0$, and $\lim_{x \to 0} f(x) = 2$, then $\lim_{x \to 0} g(x) = 2$.

   (b) If $p(x)$ is a polynomial, then $\lim_{x \to a^-} p(x) = \lim_{x \to a^+} p(x)$ for all real numbers a.

Self Evaluation 1 (written portion due at the beginning of class Tuesday, October 7)

This self evaluation is a place for you to think about the course and your own work in the course in a more holistic manner than just doing a problem set. As such, please write about your learning in this class, answering each of the following questions in your self evaluation.

- What has been most helpful to your learning so far this semester? Explain how that has aided your learning.

- What has been the most difficult concept for you so far this semester in this class? Please be as specific as possible about what's been difficult about that concept.

- What concept(s) were you struggling with and now feel like you understand?

- What steps have you taken to help your understanding when you've been struggling with something?

When you turn in your reflection, also make an appointment for a conversation with me about it.