Part I (due at the beginning of class Thursday, November 20)

Write down on a separate piece of paper that I will collect what you remember about integrals, including things you found confusing about them and things you like about them.

Part II: Problems (due at the beginning of class Tuesday, November 25)

1. A painter leans a 25-foot long ladder against the wall of a house. While the painter is getting supplies ready on the ground, a mischievous child pulls the base of the ladder away from the house at a rate of 2 feet per second.

   (a) Find the rate at which the top of the ladder is moving down the wall when the base of the ladder is

      i. 7 feet from the wall.
      ii. 15 feet from the wall.
      iii. 24 feet from the wall.

   (b) The wall of the house, the (perfectly level) ground, and the ladder form a right triangle. At what rate is the area of that triangle changing when the base of the ladder is 7 feet from the wall?

   (c) When base of the ladder is 7 feet from the wall, at what rate is the angle between the top of the ladder and the house changing?

2. For each part, sketch a graph of a function that meets each of the given conditions or explain why such a graph is impossible to sketch.

   (a) $f(1) = 5$, $f(4) = 2$, $f'(1) = f'(4) = 0$, $f'(x) > 0$ for $x < 1$, and $f'(x) \leq 0$ for $x > 1$

   (b) $f'(x) > 0$ for $x < 5$, $f(5) = 7$, $f'(x) < 0$ for $x > 5$, and $f(x)$ has a local minimum at $x = 5$.

Bonus: How fast is the top of the ladder in problem 1 accelerating when the base of the ladder is 7 feet from the wall?