LAS Calculus
Motion
Homework 7

1. An object moves so that it's position at time t seconds is given by $f(t) = t^3 - 2t^2 + 5t + 2$ inches. (In particular, in t seconds, it will be $f(t)$ feet away from you.) Find the object's velocity and acceleration for each of the following times. Tell whether the object is moving away from you or toward you at these times.

   (a) $t = 1$ second.

   Result: The velocity will be 4 inches/sec and the acceleration will be 2 inches/sec^2. The object will be moving away.

   (b) $t = 3$ seconds.

   Result: The velocity will be 20 inches/sec and the acceleration will be 14 inches/sec^2. The object will be moving away.

2. A large, furry spider is thrown upwards so that in t seconds, it will be $h(t) = -16t^2+96t+6$ feet high. When will the spider be at its highest? How high will the spider get? (Be sure to justify your answer.)

   Result: The spider will be highest at $t = 3$ seconds, when it will be 150 feet high.