Homework 1, Graded Problems  
Due Tuesday, 1/23

A ball is dropped from the top of a 100 foot tall tower. Its height in feet above ground is measured by the function

\[ f(t) = 100 - 16t^2 \]

where \( t \) is time (in seconds) since it was dropped.

NOTE: All answers must have correct units.

1. Graph \( f \). Your graph must include correctly labeled axes with correct units. Assume that the ball comes to rest on the ground and does not bounce.

2. When does the ball hit the ground?

3. How far did it fall?

4. What was its average velocity as it fell?

5. How far did the ball fall between the times \( t = 1 \) second and \( t = 2 \) seconds?

6. What was its average velocity during this time interval?

7. What was its average velocity during the interval from \( t = 1.5 \) seconds to \( t = 2 \) seconds.

8. What was its average velocity during the interval from \( t = a \) seconds to \( t = 2 \) seconds?

9. Find an interval on which the average velocity was \(-50\) ft/s.

10. Now suppose that an object moves straight up from the ground so that its height (in feet) after \( t \) minutes is

\[ g(t) = 6 \sin(0.3t) \]

Find an interval on which its average velocity would be \( 0.9 \) ft/min.