2.1 - 2.2
Rate of Change / Applications of Derivatives

- Average Rate of Change: slope from 2 points $\frac{\Delta y}{\Delta x}$

- Instantaneous Rate of Change: derivative evaluated at a point

- $s(t)$ = position
  $v(t) = s'(t)$ = velocity
  $a(t) = v'(t) = s''(t)$ = acceleration

- $s(t) = \frac{1}{2}gt^2 + v_0t + s_0$
  s_0 = initial height
  v_0 = initial velocity
  $g = -32 \text{ ft/sec}^2$ or -9.8 m/sec^2

Ex) Ball thrown upwards w/ initial velocity 20 ft/sec from top of building 130 ft tall.

a) Write function to model the situation.
$h(t) = -16t^2 + 20t + 130$

b) Write velocity function.
$v(t) = -32t + 20$