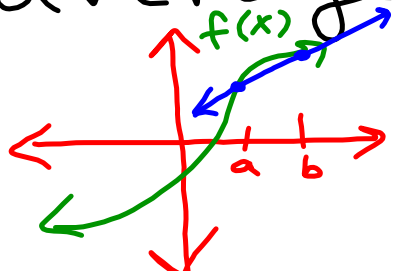


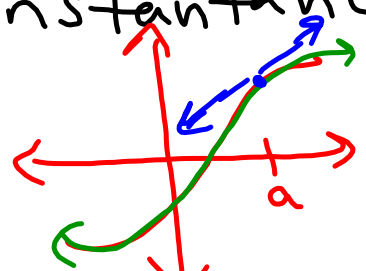
## rates of change (ch. 2+3)

average rate of change  
slope of secant line



$$\frac{f(b) - f(a)}{b - a}$$

instantaneous rate of change  
slope of tangent line



$$f'(a)$$

position  $s(t)$

velocity: rate of change of  
Position

average velocity:

$$\frac{s(b) - s(a)}{b - a} = \frac{\Delta s}{\Delta t}$$

instantaneous velocity:

$$s'(t) = v(t)$$

acceleration: rate of change  
of velocity

avg. acceleration:

$$\frac{v(b) - v(a)}{b - a} = \frac{\Delta v}{\Delta t}$$

instantaneous:

$$s''(t) = v'(t) = a(t)$$