

Day 20 is Thursday, October 11, 2012

Pick Up New Class Drill from the table.

Start work on Class Drill 9 (in Course Packet)

Observe correspondence in behavior at a particular  $x=c$ .

~~the~~ behavior of function  $f$   $\iff$  behavior of  $f'$

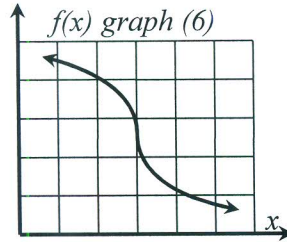
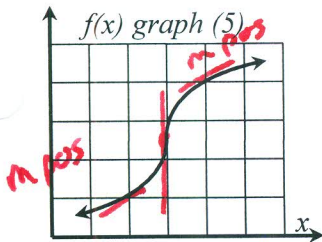
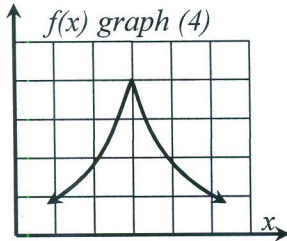
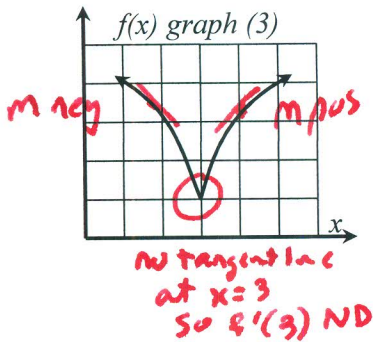
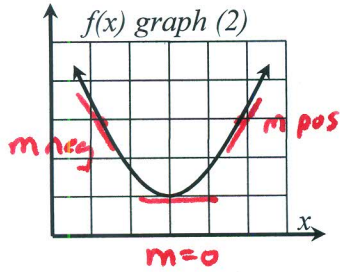
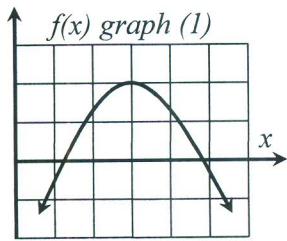
line tangent to graph of  $f$  at  $x=c$  tilts upward  $\iff f'(c)$  is positive

line tangent to graph of  $f$  at  $x=c$  tilts downward  $\iff f'(c)$  is negative

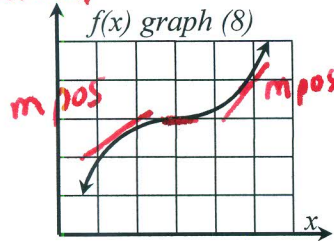
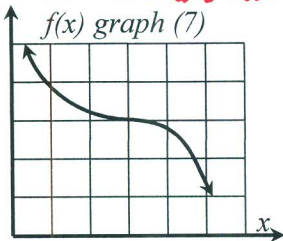
line tangent to graph of  $f$  at  $x=c$  is horizontal  $\iff f'(c) = 0$

Either  $f$  has no tangent line at  $x=c$  or  $f$  has a vertical tangent at  $x=c$   $\iff f'(c)$  DNE

Class Drill 9: Match the Graph of  $f$  to the Sign Chart for  $f'$



at  $x=3$ , tangent line exists, but it is vertical so  $m$  is not defined.



at  $x=3$  horizontal tangent  $m=0$

(a)  $f'(x)$   $\xrightarrow{\text{-----} 0 \text{+++++}}$   
 $x = 3$

Sign chart (a) matches graph (2).

(b)  $f'(x)$   $\xrightarrow{\text{-----} \text{ND} \text{+++++}}$   
 $x = 3$

Sign chart (b) matches graph (3).

(c)  $f'(x)$   $\xrightarrow{\text{+++++} 0 \text{+++++}}$   
 $x = 3$

Sign chart (c) matches graph (8).

(d)  $f'(x)$   $\xrightarrow{\text{+++++} \text{ND} \text{+++++}}$   
 $x = 3$

Sign chart (d) matches graph (5).

(e)  $f'(x)$   $\xrightarrow{\text{+++++} 0 \text{-----}}$   
 $x = 3$

Sign chart (e) matches graph \_\_\_\_\_.

(f)  $f'(x)$   $\xrightarrow{\text{+++++} \text{ND} \text{-----}}$   
 $x = 3$

Sign chart (f) matches graph \_\_\_\_\_.

(g)  $f'(x)$   $\xrightarrow{\text{-----} 0 \text{-----}}$   
 $x = 3$

Sign chart (g) matches graph \_\_\_\_\_.

(h)  $f'(x)$   $\xrightarrow{\text{-----} \text{ND} \text{-----}}$   
 $x = 3$

Sign chart (h) matches graph \_\_\_\_\_.

