

Get out

- 1) 3.5 HW
- 2) 3.6 HW
- 3) AP Prep #3 (turn-in)
- 4) Notes ☺

off Exam  
# 9

$$4y^2 - 3x^2 = 2 - 4xy$$

$$\boxed{-4xy}$$

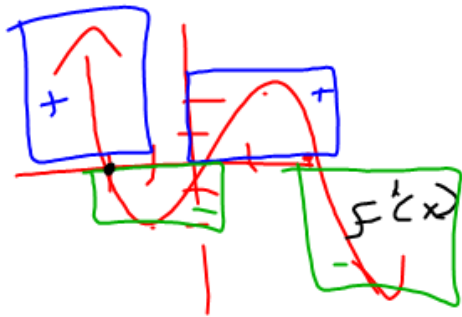
(2.4)  $8yy' - 6x = -4xy' - 4y$

$$32y' - 12 = -8y' - 16$$

$$40y' = -4$$

$$y' = -4/40 = -1/10$$

# 11

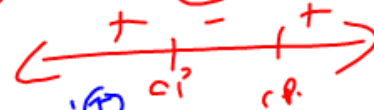


$f(x)$  Concave Up:  
 $-1 < x < 1$

$f(x)$  Concave Down:  
 $x < -1$   
 $x > 1$

$f'$   
 inc / dec about  $f(x)$

shows  $\oplus$  or  $\ominus$



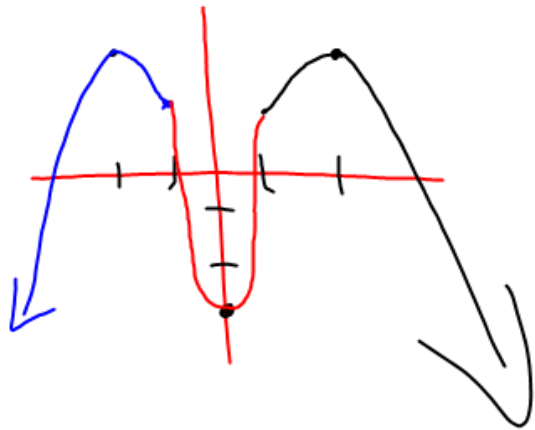
$f' \oplus$   
 tells you your  
 y-values!

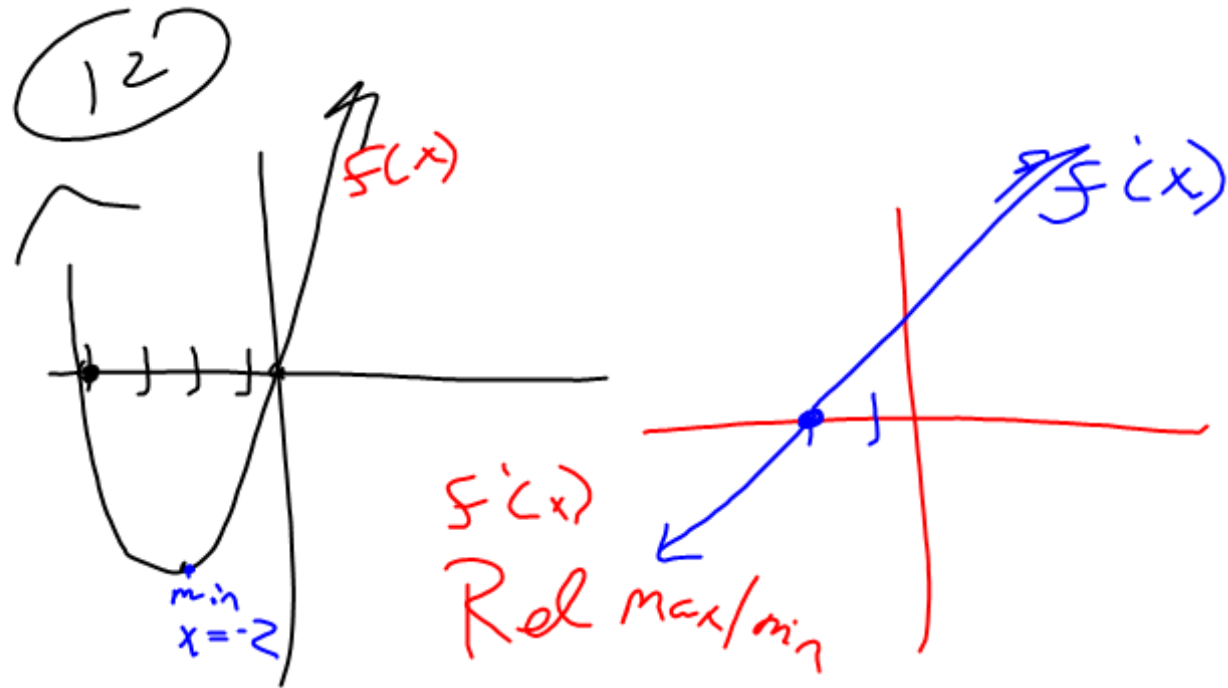
inc  
 $x < -2$   
 $0 < x < 2$

Rel max @  $x = -2$   
 $x = 2$

dec  
 $-2 < x < 0$   
 $x > 2$

Rel min @  $x = 0$





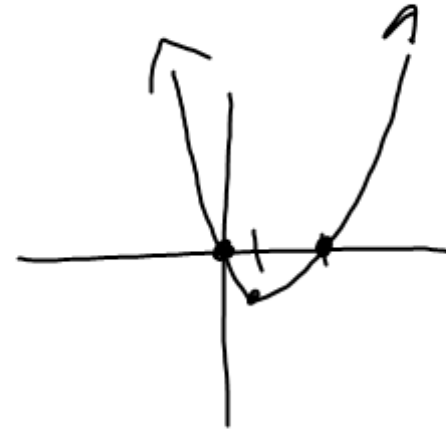
Bonus

$$f(2) = f(0) = 0$$

$$f'(x) < 0 \quad \text{if } x < 1 \quad \text{dec}$$

$$f'(x) > 0 \quad \text{if } x > 1 \quad \text{inc}$$

$$f''(x) > 0 \quad \text{Concave } \uparrow$$



# AP Practice Test

Apr: 1 14<sup>th</sup>

Apr: 1 28<sup>th</sup>

Rm 501

by 7:45 AM !!  
☺

55 min

50 min

Break 15 min

30 min

60 min

## 3.5 limits @ Infinity

$$\lim_{x \rightarrow \infty} \frac{1}{x} = \frac{1}{\infty} = 0$$

\* If you get  $\frac{\infty}{\infty}$   
Keep going!

VA : Comes from bottom set = 0.  
(vertical)

$$\lim_{x \rightarrow \infty} \frac{3x^2}{x^2+2} = 3$$

HA:  $y = 3$

$$\lim_{x \rightarrow \infty} \frac{2x}{\sqrt{x^2+2}} = 2 \rightarrow \frac{2x}{x}$$

$$\lim_{x \rightarrow -\infty} \frac{2x}{\sqrt{x^2+2}} = -2 \rightarrow \frac{2x}{|x|}$$

$$\lim_{x \rightarrow \infty} \frac{x}{x^2} = 0$$

$y = 0$

$$\lim_{x \rightarrow \infty} \frac{1}{x} = \frac{1}{\infty} = 0$$

Pg 205

(19)

c. lim  
 $x \rightarrow \infty$ 

$$\frac{5 - 2x^{3/2}}{3x - 4} = -\infty$$

 $-\infty$  or DNE

$$25. \lim_{x \rightarrow -\infty} \frac{5x^2}{x+3}$$

(top bigger, so since  $|x| \gg 1$   
cancel

$$\lim_{x \rightarrow -\infty} \frac{5x}{1 + \frac{3}{x}}$$

Now plug in  $-\infty$

$$\text{so } \boxed{-\infty}$$

$$33. \lim_{x \rightarrow \infty} \frac{1}{2x + \sin x} = \frac{1}{\infty} = 0$$

$$\lim_{x \rightarrow \infty} \sin x = 0$$

$$41. \lim_{x \rightarrow -\infty} (x + \sqrt{x^2 + 3})$$

$$x + \sqrt{x^2 + 3} \cdot \frac{x - \sqrt{x^2 + 3}}{x - \sqrt{x^2 + 3}}$$

(Foil  
top)

$$\frac{x^2 - (x^2 + 3)}{x - \sqrt{x^2 + 3}}$$

$$\lim_{x \rightarrow -\infty} \frac{-3}{x - \sqrt{x^2 + 3}} = \frac{-3}{-\infty}$$

$$= 0$$

long Division

$$\begin{array}{r}
 3x + 11 \\
 \hline
 x - 3 \overline{) 3x^2 + 2x - 1} \\
 \underline{-3x^2 + 9x} \phantom{-1} \\
 11x - 1 \\
 \underline{-11x + 33} \\
 32
 \end{array}$$

So  $y = 3x + 11$