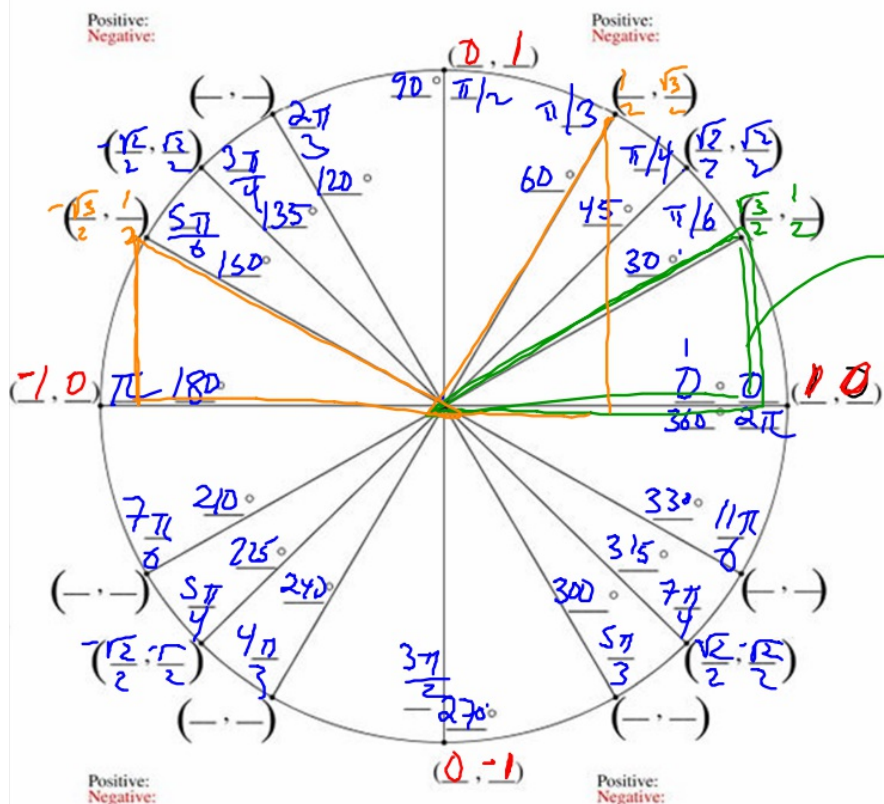
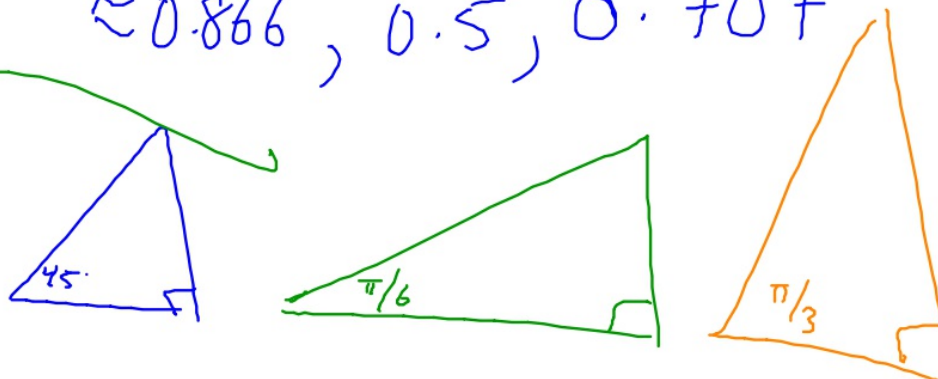


Good afternoon: attach warm up to notes, then fill out unit circle:
 Fill in The Unit Circle



$$\frac{\sqrt{3}}{2}, \frac{1}{2}, \frac{\sqrt{2}}{2}$$

$$\approx 0.866, 0.5, 0.707$$

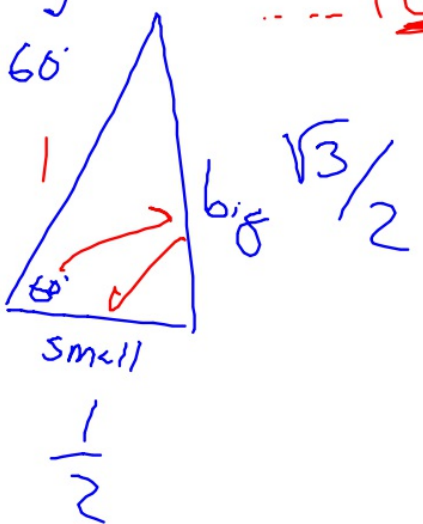


Reminder:
 tutoring Tues 4-5p
 assessing Weds DS! similar to hw

$\lim_{\theta \rightarrow \frac{\pi}{3}} \tan(\theta)$

$\theta \rightarrow \frac{\pi}{3}$

TOA



$\frac{\text{opp}}{\text{adj}} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}}$

4th grade

$\frac{\sqrt{3}}{2} \cdot \frac{2}{1} = \sqrt{3}$

Homework sols: check, correct (don't erase!), ask questions of table/me

p.55

17. 2

18. 4

19. dne, $-1 \neq 1$

23.

a. $f(1)=2$

b. dne. $3.5 \neq 1$

c. $f(4)$ undefined.

d. $\lim f(x) = 2$

24. a. $f(-2)$ undef

b. dne

c. $f(0)=4$

d. dne, $0.5 \neq 4$

20. dne

21. dne

22. dne

24. h)

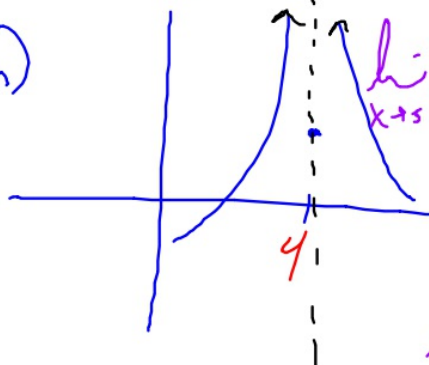
e. $f(2)$ undef

f. $\lim f = 0.5$

g. $f(4)=2$

h. dne ∞

50-)
h
 $x \rightarrow 5$



$$\frac{5-x}{x^2-25}$$

$$\frac{5-x}{(x-5)(x+5)}$$

$$\frac{-1 \cdot \cancel{(x-5)}}{(x-5)(x+5)}$$

$$\frac{-1}{x+5}$$

$$\left(-\frac{1}{10} \right)$$

p.67

41. 3

42. -5

43. -2

44. -7

45. 12

46. 3

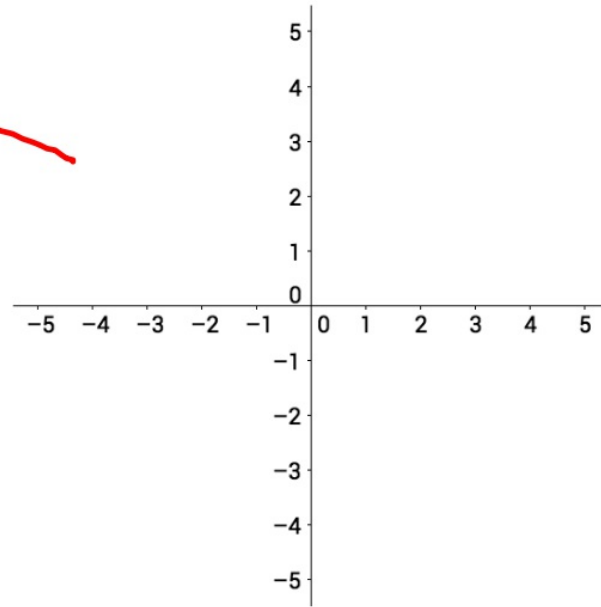
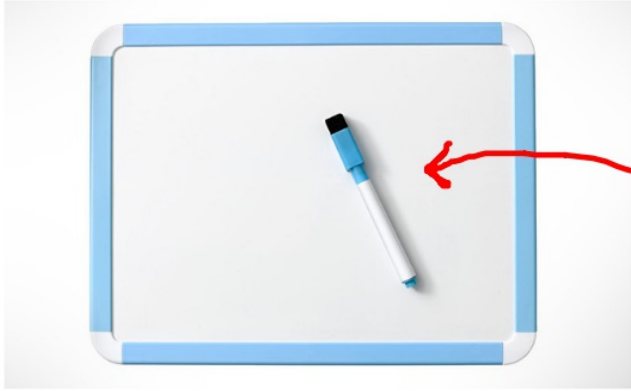
47. -1

48. $1/2$

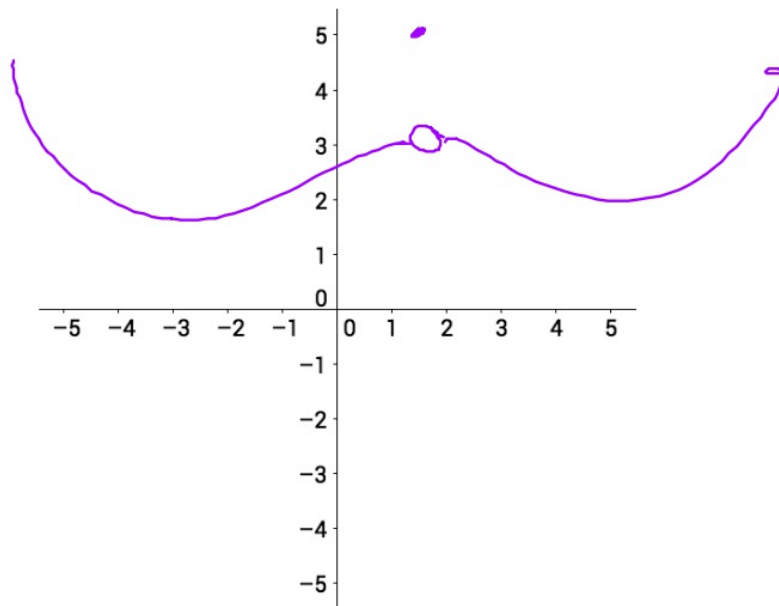
49. $1/8$

50. $-1/10$

Put this homework in the homework section of your binder!
It is your ticket to re-assess Wednesday's test if needed



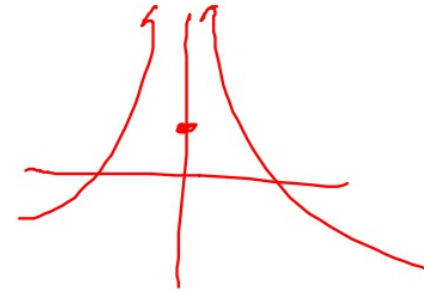
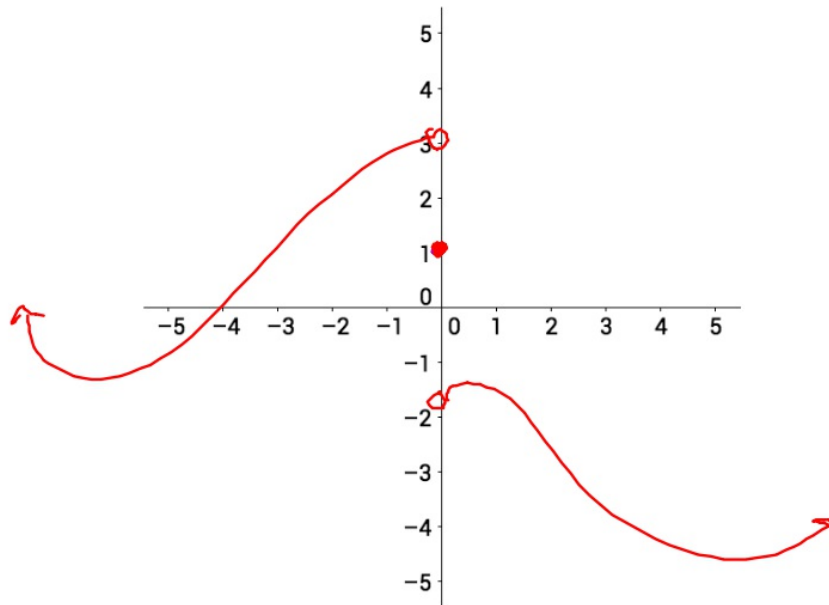
Sketch a function $y=f(x)$ such that $\lim_{x \rightarrow 2} f(x) = 3$ but $f(2) \neq 3$



After you're confident of a solution, sketch it onto the paper copy

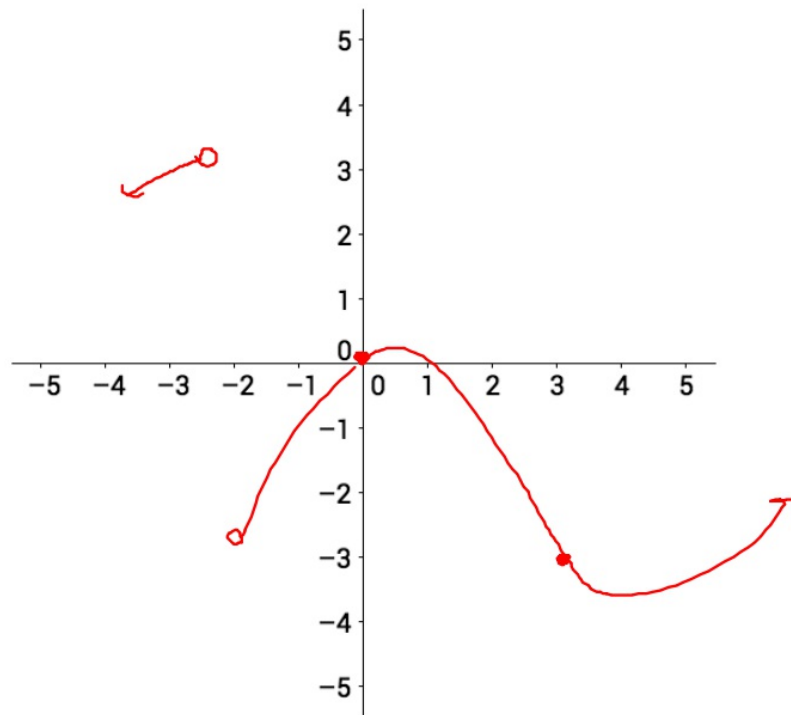
Sketch a function $y=f(x)$ such that $\lim_{x \rightarrow 0} f(x)$ does not exist and $f(0)=1$.

$(0,1)$



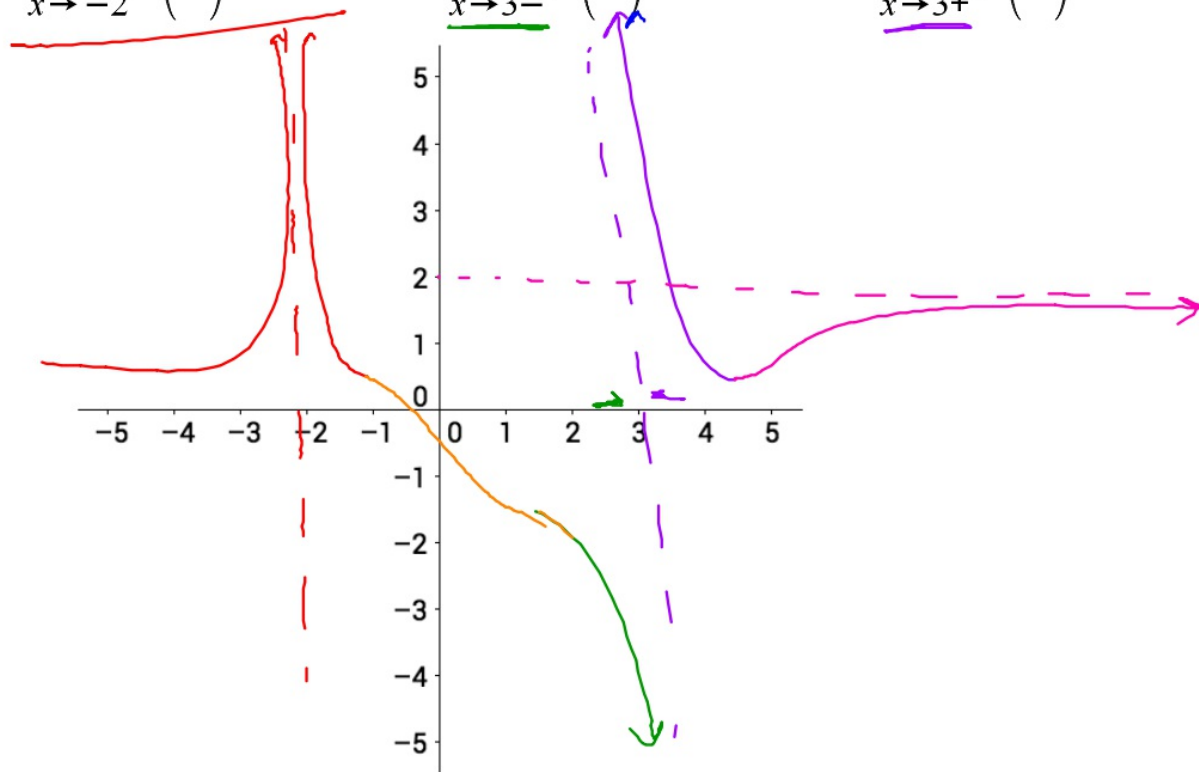
Sketch a function $y=f(x)$ such that

$$\lim_{x \rightarrow -2^-} f(x) = 3 \quad \text{and} \quad \lim_{x \rightarrow -2^+} f(x) = -3 \quad \text{and} \quad f(3) = -3 \quad \text{and} \quad \underline{f(0) = 0}$$



Sketch a function $y=f(x)$ such that

$$\lim_{x \rightarrow -2} f(x) = \infty \quad \text{and} \quad \lim_{x \rightarrow 3^-} f(x) = -\infty \quad \text{and} \quad \lim_{x \rightarrow 3^+} f(x) = \infty \quad \text{and} \quad \lim_{x \rightarrow \infty} f(x) = 2$$



Our limits toolkit, algebraically

Direct substitution: always do this first

Factor, then cancel

Rationalization



Numerical methods

Special Trig limits (will learn next week)

Rationalizing to find a limit

(notes, continued)

$$\lim_{x \rightarrow 7} \frac{\sqrt{x+2} - 3}{x-7} = \frac{\sqrt{9} - 3}{7 \cdot 7} = \frac{0}{0} \quad \text{||}$$

$$\lim_{x \rightarrow 7} \frac{(\sqrt{x+2} - 3) \cdot \frac{1}{\sqrt{x+2} + 3}}{x-7} \cdot (\sqrt{x+2} + 3)$$

$\sqrt{} \pm a$
conj $\sqrt{} \mp a$

$$\lim_{x \rightarrow 7} \frac{x+2-9}{(x-7)(\sqrt{x+2} + 3)}$$

$$\lim_{x \rightarrow 7} \frac{\cancel{x-7}}{(\cancel{x-7})(\sqrt{x+2} + 3)}$$

$$\Rightarrow \lim_{x \rightarrow 7} \frac{1}{\sqrt{x+2} + 3} = \frac{1}{\sqrt{9} + 3} = \frac{1}{3+3} = \frac{1}{6}$$

$$\lim_{x \rightarrow 4} \frac{x - \sqrt{3x+4}}{4-x} = \frac{4 - \sqrt{12+4}}{4-4} = \frac{4 - \sqrt{16}}{0} = \frac{0}{0} \quad \parallel$$

Multiply by conjugate

$$\lim_{x \rightarrow 4} \frac{(x - \sqrt{3x+4}) \cdot (x + \sqrt{3x+4})}{(4-x)(x + \sqrt{3x+4})}$$

$$\lim_{x \rightarrow 4} \frac{x^2 - (3x+4)}{(4-x)(x + \sqrt{3x+4})} \Rightarrow \lim_{x \rightarrow 4} \frac{x^2 - 3x - 4}{(4-x)(x + \sqrt{3x+4})}$$

$$\lim_{x \rightarrow 4} \frac{(x-4)(x+1)}{(4-x)(x + \sqrt{3x+4})}$$

Factor quadratic

$$\lim_{x \rightarrow 4} \frac{-1(4-x)(x+1)}{(4-x)(x + \sqrt{3x+4})}$$

huzzah!

$$\lim_{x \rightarrow 4} \frac{-1(x+1)}{x + \sqrt{3x+4}}$$

$$= \frac{-1(4+1)}{4 + \sqrt{12+4}}$$

$$= \frac{-5}{4 + \sqrt{16}}$$

$$= \frac{-5}{8}$$

Whew!!

hmm...
oh! factor out a -1!

HW for Weds:

p. 67 #51-56

~~p. 79 #9-12~~

Front of

Handout

#1-15

What will be on Weds. assessment??

No Calculator!

- evaluate limits algebraically by direct sub and factor/cancel (no rationalization yet)

Hint: know your trig!

- given a graph, find limits or explain why d.n.e.