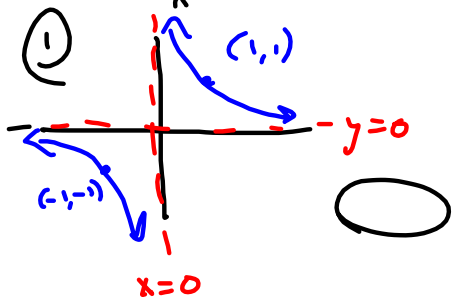
$5\sqrt{4-2x} - 8$

$5|4-2x| - 8$ $\quad$ $5(4-2x)^3 - 8$

$f(x) = \frac{1}{x}$

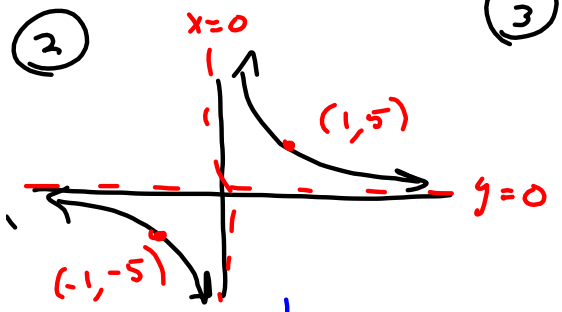


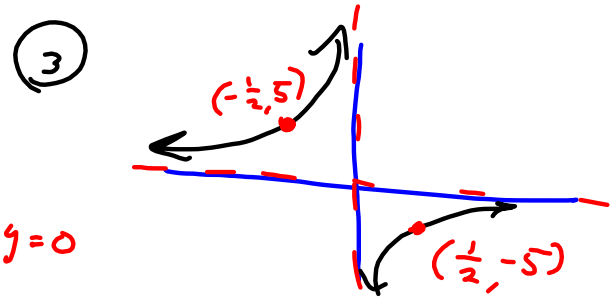
$\frac{5}{4-2x} - 8$

$-2x \rightarrow -2(x-2)$

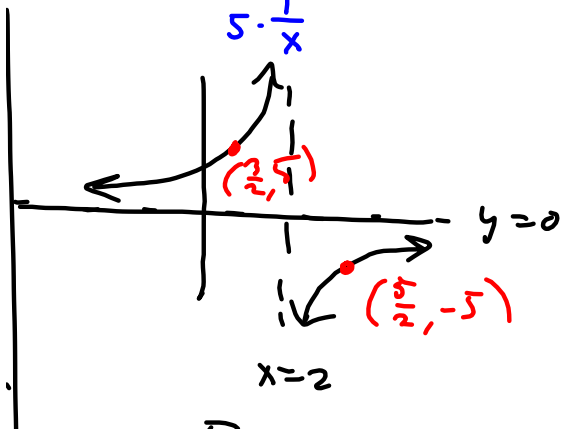
$\frac{1}{x} \rightarrow \frac{5}{x} \rightarrow \frac{5}{-2x}$

$\rightarrow \frac{5}{-2(x-2)} \rightarrow \frac{5}{-2(x-2)} - 8$



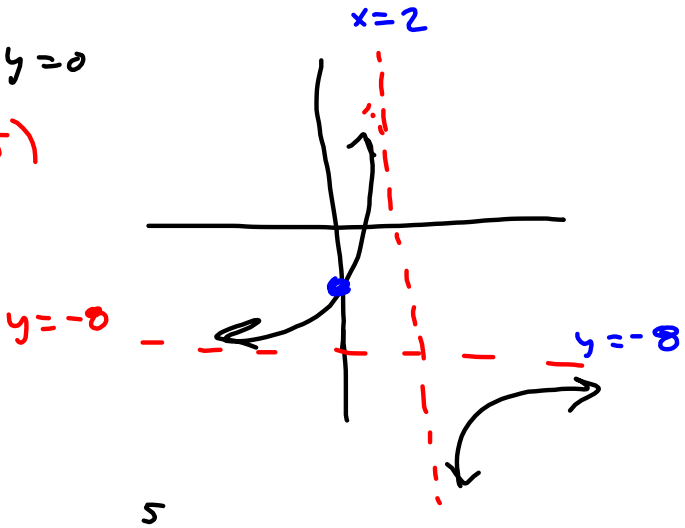


$5 \cdot \frac{1}{x}$



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

$(1,1) \mapsto (-\frac{1}{2},1)$



$\frac{5}{-2(x-2)}$

y-int to help

$\frac{5}{2(0-2)} - 8$ final graph is negative

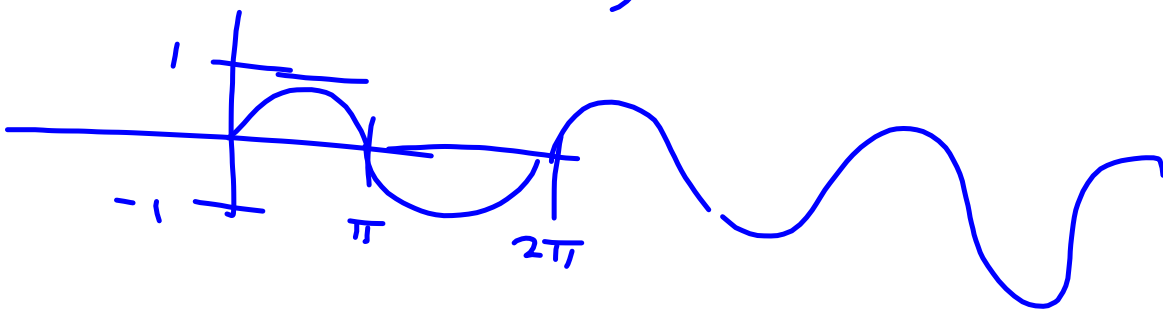
$\frac{5}{-4} - 8$

$\frac{5}{-2(x-2)} - 8$

In the future, a COMPLETE graph includes x- and y-intercepts.

$y = -5\sin\left(\frac{\pi}{4}x - \pi\right) + 70$

In your future are graphs of this sort of thing



§2.2, 2.3 homework off
I want to check your worksheets.

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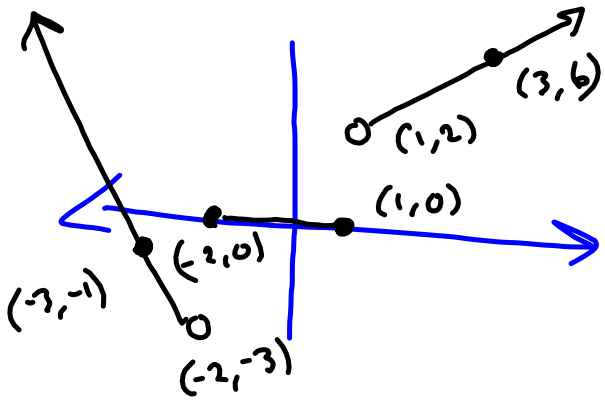
§2.2 Piecewise: Build the function



$$m = \frac{-3+1}{-2+3} = \frac{-2}{1} = -2$$

$$m = \frac{6-2}{3-1} = \frac{4}{2} = 2$$

$$f(x) = \begin{cases} 2(x-1)+2 & x < -2 \\ 0 & -2 \le x \le 1 \\ -2(x+3)-1 & x > 1 \end{cases}$$

$$y = m(x-x_1)+y_1$$

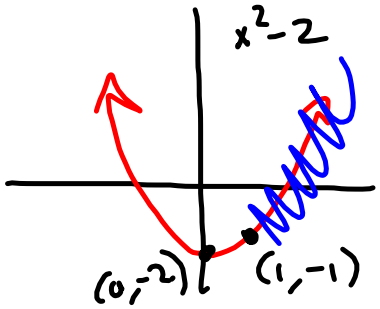
$$y = -2(x+3)-1$$

Graph:

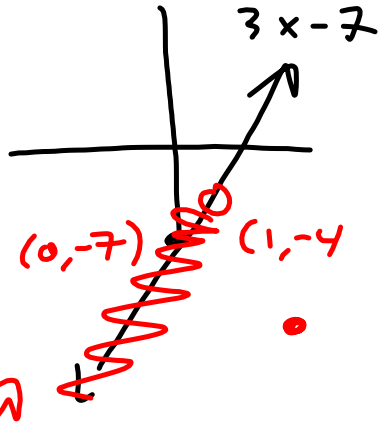
$$f(x)=\begin{cases} x^2-2 & x\le 1 \\ 3x-7 & x>1 \end{cases}$$

① Find suture points,
② Graph separately
③ Combine into 1 graph

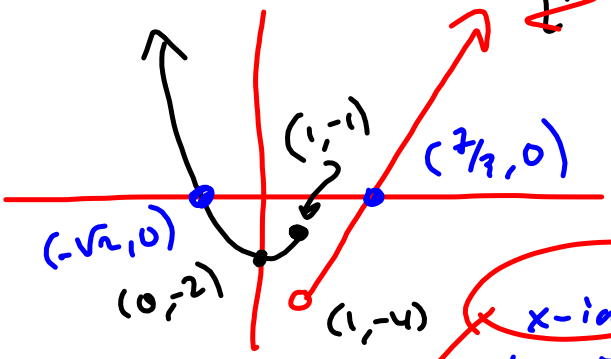
$x=1$ is suture pt.



$1^2-2=-1$



$3(1)-7=-4$



$x^2-2=0$
$x^2=2$
$x=\pm\sqrt{2}$

$3x-7=0$
$3x=7$
$x=\frac{7}{3}$

x-ints & y-int will be asked-for.

Bonus on this test.

§2.2 Homework Included.

§2.3 KNOW the basic funcs.

How to train

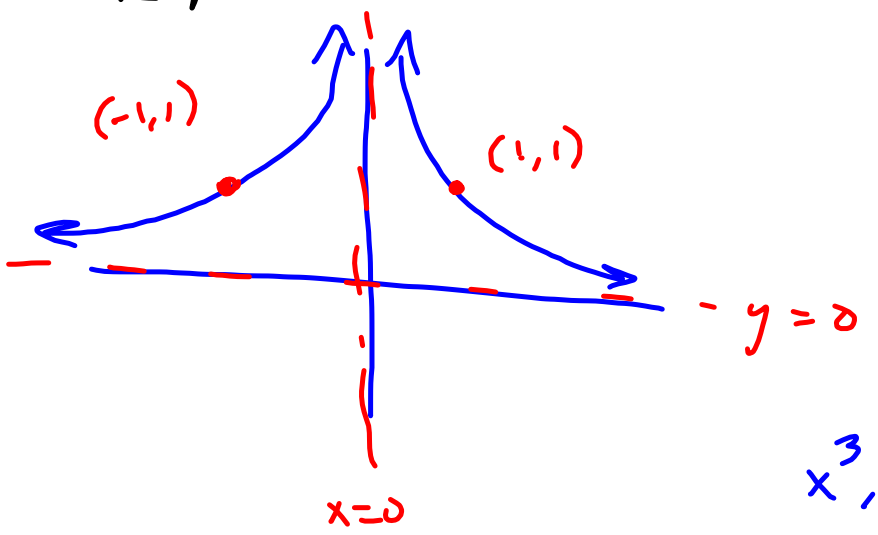
ANSWERS ON one sheet.

Blank sheet with just the questions

$\sqrt{x}$, x, $|x|$, $\frac{1}{x}$, $\frac{1}{x^2}$, . . .

Blanksheet You reproduce the graphs

Repeat until mastered.



x^3, x^2

$\frac{1}{x}, \frac{1}{x^2}, \frac{1}{x^3}$

$$0 < \frac{(x+2)(x-5)^2}{(x-1)^2(x+3)^3}$$

§2.4 operations on functions.

$f+g,\ f-g,\ fg,\ \frac{f}{g}$ ARITHMETIC

$f \circ g$ COMPOSITION

$f \cdot g$

$f+g = (f+g)(x)$

$= f(x) + g(x)$

$f(x) = \frac{x+1}{x-3},\ g(x) = \sqrt{x+4}$

$(f+g)(x) = \frac{x+1}{x-3} + \sqrt{x+4}$

$f-g$, fg & $\frac{f}{g}$ work exactly as you'd hope & expect.

Domain of $(f+g)(x)$

$= f(x)+g(x)$ is

$= \{x \mid f \text{ \& } g \text{ can both eat } x\}$

$= \{x \mid x \in \mathcal{D}(f) \text{ and } x \in \mathcal{D}(g)\}$

$= \mathcal{D}(f) \cap \mathcal{D}(g)$

↳ Seems to me the way to think your way to an answer.

Domain of $f = \mathcal{D}(f)$

" " $g = \mathcal{D}(g)$

$f(x) = \frac{x+1}{x-3}$, $g(x) = \sqrt{x+4}$

$\mathcal{D}(f) = \{x \mid x \neq 3\}$

Need: $x-3 \neq 0$

$x \neq 3$

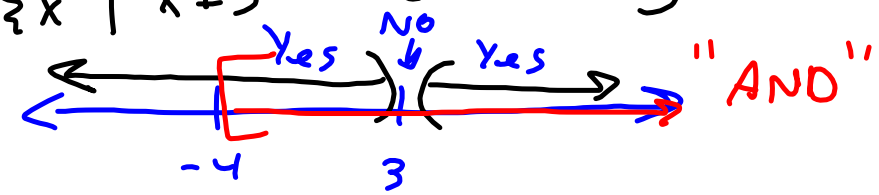
$\mathcal{D}(g) = \{x \mid x \geq -4\}$

Need: $x+4 \geq 0$

$x \geq -4$

$\mathcal{D}(f+g) = \{x \mid x \in \mathcal{D}(f) \text{ and } x \in \mathcal{D}(g)\}$

$= \{x \mid x \neq 3 \text{ and } x \geq -4\}$



$= [-4, 3) \cup (3, \infty)$

Next time:

§2.4 Due @ end of class

§2.5 Have it outlined

The basic functions worksheet.

Active in class, after 20 mins.