Pick Up the Warm Up

HW Tally

(1) Write the inequality that represents each graph

$x < 5$ or $-\infty < x < 5$

$x \geq -2$

$-3 < x < 5$

$x \leq -1$ OR $x \geq 3$

Single Variable Inequality

answer can be displayed on a number line

Method 1 | Method 2

Solve directly (if possible)

A) find boundary points
B) TEST a point or two

Solve the inequality using either method or solve using both methods if you want the practice).

Boundary Point Method

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

$(10x)\frac{1}{2x} = \frac{1}{2}(10x) - \frac{2}{5x}(10x)$

$5 = 5x - 4$

$5x = 9$

$x = \frac{9}{5} = 1.8$

boundary point

$x < 1.8$

Direct (if possible)

$\frac{1}{2x}(10x) > \frac{1}{2}(10x) - \frac{2}{5x}(10x)$

$5 > 5x - 4$

$+4 \quad +4$

$9 > 5x$

divide by 5

$1.8 > x$

$x < 1.8$

Boundary Point Method

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

Direct (if possible)

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

(3)

$$\frac{6|2x+5|}{6} \geq \frac{6x+24}{6}$$

$$|2x+5| > x+4$$

$2x+5 > x+4$

$-x \quad -x$

$x+5 > 4$

$-5 \quad -5$

$x > -1$

$2x+5 < -(x+4)$

$2x+5 < -x-4$

$+x \quad +x$

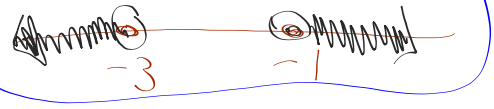
$3x+5 < -4$

$-5 \quad -5$

$3x < -9$

$x < -3$

$x < -3$ OR $x > -1$



$$6|2x+5| \geq 6x+24$$

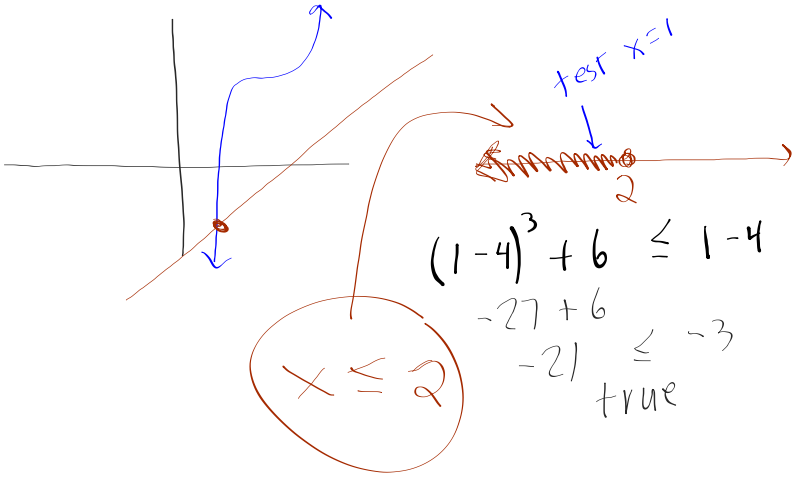
Boundary Point

directly $6|2x+5| \geq 6x+24$

(4) Solve $(x-4)^3 + 6 \leq x-4$

is so complex we won't be able to use either method. So we'll have to be happy with an approximate answer.

Strategy: Break the L and R side into a system and analyze the graph.

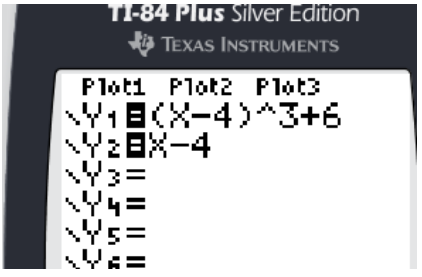


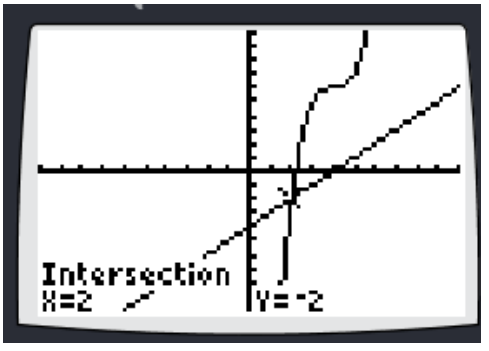
$(x-4)^3 + 6 \leq x - 4$

1. Graph to find the intersections of the Left and Right Functions

2. Find the boudary point(s), mark on a number line.

3. Test a point. Decide which area to shade.





Reminders

19 Ch. 4 (4.2.2) Solving Problems using Systems	**20** **Review Ch. 4** **Turn in Notebook today**	**22** **Test on Ch. 4** **Turn in Ch 4 HW**	**23** **No School** **Thanksgiving**	**24** **No School**
26 Final Exam Review Day #1	**27** Final Exam Review Day #2 Turn – in textbooks today	**28** **Final Exam Part 1**	**29** **Final Exam Part 2**	**30** ✓ **Grades** ✓ **Brain Breaks** ✓ **Advice for Alg 2B**

Ch 4 Test Information Sheet

Check the HW

completing the square to solve the equation

#70

70 $x^2 + 12x + 15 = 75$

$-15 \quad -15$

Solve by completing the square

$x^2 + 12x + 36 = 60 + 36$

$(x+6)^2 = 96$

$\sqrt{\quad} \qquad \sqrt{\quad}$

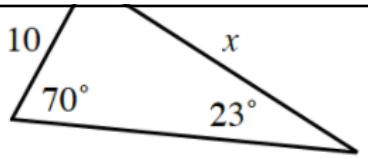
$x + 6 = \pm\sqrt{96}$

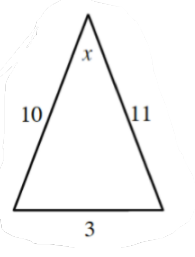
$x =$

$\left(\frac{12}{2}\right)^2$

$2x + y = 12$

$xy = 16$


10
x
70°
23°


x
10
11
3

QUESTIONS ON HW

67

(a) $5-(y-3)=3x$ (b) $4(x+y)=-2$

67 a) $5-(y-3)=3x$

$-5 \qquad -5$

$-(y-3)=3x-5$

$-y+3=3x-5$

$-3 \qquad -3$

$-y=3x-8$

multiply all terms by (-1)

$y=-3x+8$

b $4(x+y) = -2$

$y = -x - \frac{1}{2}$

68 A $(y-3)^2 = 2y-10$

$(y-3)(y-3) = 2y-10$

$y^2 - 3y - 3y + 9 = 2y - 10$

$y^2 - 6y + 9 = 2y - 10$

$y^2 - 8y + 19 = 0$

so now I'll use the Quadratic Formula

$a=1 \quad b=-8 \quad c=19$

$a=1 \quad b=-8 \quad c=19$

$$x=\frac{-(\ )\pm\sqrt{(\ )^2-4(x)(\ )}}{2(\ )}$$

(9 d)

$$\frac{2m^2+7m-15}{m^2-16}\cdot\frac{m^2-6m+8}{2m^2-7m+6}$$

$$\frac{(m+5)(2m-3)}{(m+4)(m-4)}\cdot\frac{(m-2)(m-4)}{(m-2)(2m-3)}$$

65a $3x + 2 \geq x - 6$

Bound. Pts

$3x + 2 = x - 6$

$-x \quad -x$

$2x + 2 = -6$

$-2 \quad -2$

$2x = -8$

$x = -4$

$x \geq -4$

test $x = 0$

$3(0) + 2 \geq (0) - 6$

$2 \geq -6$

true

65b $2x^2 - 5x < 12$

$2x^2 - 5x = 12$

$2x^2 - 5x - 12 = 0$

$(2x+3)(x-4) = 0$

$2x + 3 = 0$ $\quad x = 4$

$x = -\frac{3}{2}$

$2(0)^2 - 5(0) < 12$

$0 < 12$

true

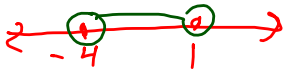
66@ $|2x+3| < 5$

$2x+3 < 5$ $\quad 2x+3 > -5$

find boundary points by solving $|2x+3| = 5$

$2x+3 = 5$ $\quad 2x+3 = -5$

$x = 1$ $\quad x = -4$



TEST $x = -2$

$|2(-2)+3| < 5$

$|-4+3| < 5$

$|-1| < 5$

$1 < 5$ true

B.B.

Aim: Solve/graph

Two Variable Inequalities

and systems

Is x = -4 solution to....

$y \geq 2x^2 + 5x - 3$

Whaaaaat ?

true

In that case is (-3, 0) a solution ? to....

$y \geq 2x^2 + 5x - 3$

$0 \geq 2(-3)^2 + 5(-3) - 3$

$0 \geq 18 - 15 - 3$

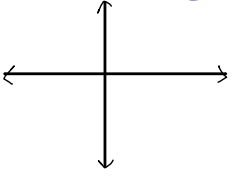
$0 \geq 0$

true

but there a few more

an infinite number to be exact

We'll show them graphically



To solve a 2-variable inequality:

1. Change to an equation.
2. Solve for y (if possible)
3. Graph the boundary function.
4. Then test a point, above or below,
5. Then shade the appropriate side.

Plan: we'll do a few schematically

Then on grid paper

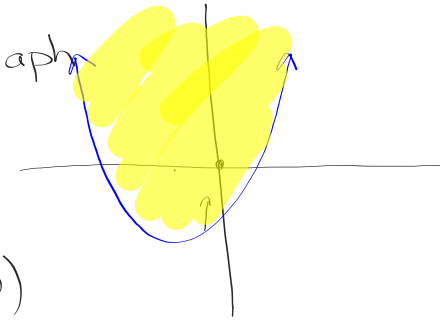
(A) Solve $y \geq 2x^2 + 5x - 3$

$\geq$ Solid

$>$ dashed

(1) and (2) $y = 2x^2 + 5x - 3$

(3) Graph



(4) TEST (0,0)

$0 \geq 2(0)^2 + 5(0) - 3$

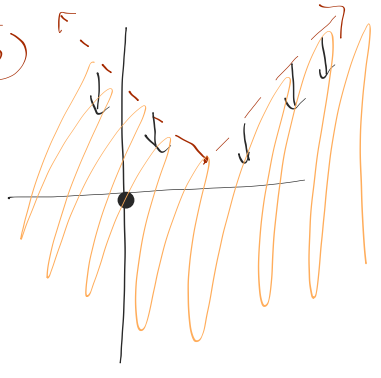
$0 \geq -3$

true

(B) $y < |x - 3| + 1$

(1) (2) bound. $y = |x - 3| + 1$

(3)



(4) TEST (0,0)

$0 < |0 - 3| + 1$

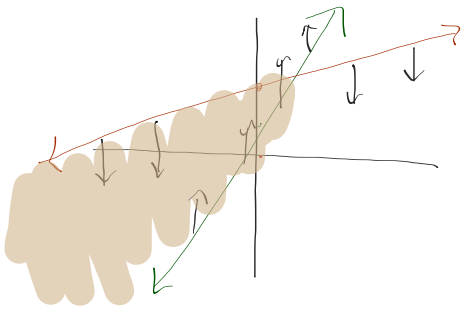
$0 < 3 + 4$

$0 < 4$ true

(C) Solve A system

(I) $y \geq 2x+1$

(II) $y \leq \frac{1}{2}x + 3$



boundary equations

$y = 2x+1$

$y = \frac{1}{2}x+3$

(I) test (0,0)

$0 \geq 2(0)+1$

$0 \geq 1$

false

(II) Test (0,0)

$0 \leq \frac{1}{2}(0)+3$

$0 \leq 3$

true

(D) with the help of GDC

$y \geq 0.2(x-5)^2-2$

$y \leq \frac{1}{2}x + 4$

B.B.

LCQ

4 .... 73ab, 74 , 76-77, 84, 87