MATH 127A TEST 3 Solutions Pre-Algebra Spring 2009 Tigran Mkrtchyan

1) *(4 points)* Solve this linear inequality and graph the solution.

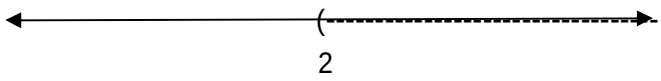
3x+5>11

3x>11-5

3x>6

$\frac{3x}{3} > \frac{6}{3}$

x>2 $(2, \infty)$



2) *(4 points)* Complete each ordered pair for equation y= - 2x+4 (Find the missing coordinate.)

(- 1, **6**) ,

x= - 1, y= ?

plug x= - 1 in the equation

y= - 2(- 1)+4=2+4=6

(**2** ,0)

y=0, x=?

0= - 2x+4

0+2x= - 2x +4+2x

2x=4

$x=\frac{4}{2}$

x=2

3) Graph the linear equations

(a) *(4 points)* y=2x+1

y-intercept is (0,1), slope is $2=\frac{2}{1}$

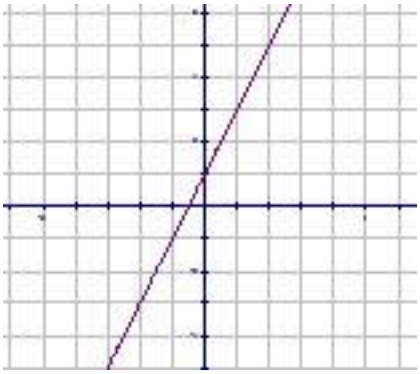
Plot (0,1), then go up 2 units, right 1 unit to plot

The second point and connect them with a straight line.

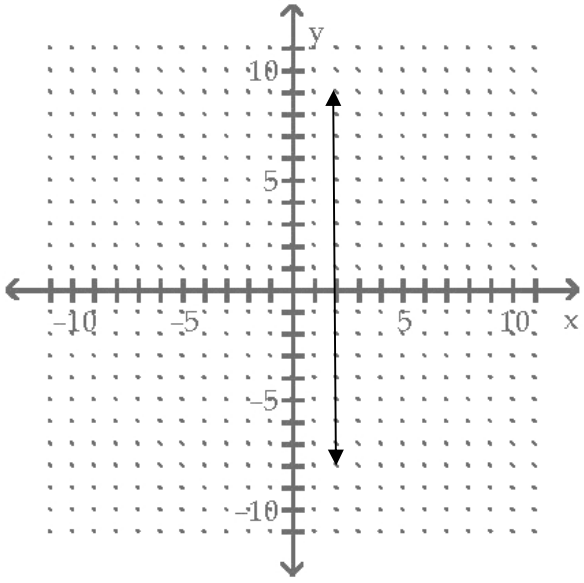
You could also make a

x-y table

x	y
0	1
1	3



(b)*(4 points)* x=2



4) Find the slope.

(a) *(4 points)* Find the slope of the line through (1,-3) and (0,4)

$$m = \frac{4-(-3)}{0-1} = \frac{7}{-1} = -7$$

(b) *(4 points)* Find the slope of the line y=-3x+4

This is of the form y=mx+b, we see the slope m= - 3

(c) *(4 points)* Find the slope of the line 2x-5y=4

We need to bring to the form y=mx+b, so solve for y

-5y=4-2x

$$-\frac{1}{5}(-5)y = -\frac{1}{5}(4-2x)$$

$$y = -\frac{1}{5}(4)+\left(-\frac{1}{5}\right)(-2x)$$

$$y=-\frac{4}{5}+\frac{2}{5}x$$

$$y = \frac{2}{5}x-\frac{4}{5}$$

Comparing to y=mx+b we see the slope is m=$\frac{2}{5}$

5) *(4 points)* Decide whether the pair of lines is parallel, perpendicular or neither
3x-y=4 and 6x-2y= - 12
We need to find the slopes first because we know if two lines have the same slopes they are parallel.
To find the slopes we'll bring them to y=mx+b form
3x-y=4
-y=-3x+4
y=-(-3x+4)
y=3x-4
so the slope is m=3

$$6x-2y= - 12$$

$$-2y=-6x-12$$

$$\frac{-2y}{-2} = \frac{-6x-12}{-2}$$

$$y = \frac{-6x}{-2} - \frac{12}{-2}$$

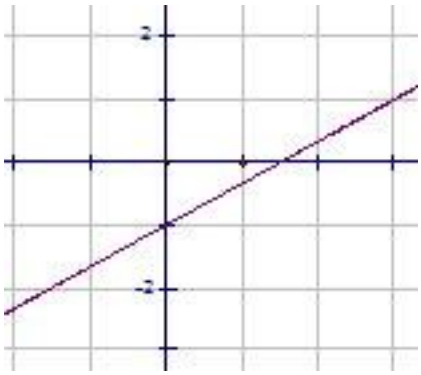
$$y = 3x + 6$$

We see the slope is m=3
The two lines have the same slopes, so they are parallel.

6) *(4 points)* Graph the line using the slope and y-intercept (you need to find the slope and y-intercept, then use them to graph the line) 2x-3y=3

To bring to y=mx+b form, solve for y

$$2x-3y=3$$
$$-3y=-2x+3$$
$$\left(-\frac{1}{3}\right)(-3)y=\left(-\frac{1}{3}\right)(-2x+3)$$
$$y=\left(-\frac{1}{3}\right)(-2)x+\left(-\frac{1}{3}\right)(3)$$
$$y=\frac{2}{3}x-1$$



So we see the slope is m=$\frac{2}{3}$ and the y-intercept is (0, - 1)

Plot (0, - 1), then go up 2 and to the right 3 units.

7) *(4 points)* Find the equation of the line that goes through (-2,4), with slope -3 (hint use point-slope form)

Use point-slope form $y-y_1=m(x-x_1)$, where the slope m= -3 and (x_1,y_1)= (-2,4)

y-4= -3(x-(-2)) or y-4= -3(x+2)

8) *(4 points)* Find the equation of the line through points (-2,3) and (3,4).

First we fint the slope is m=$\frac{4-3}{3-(-2)}=\frac{1}{5}$, then we use the point-slope form $y-y_1=m(x-x_1)$, we get

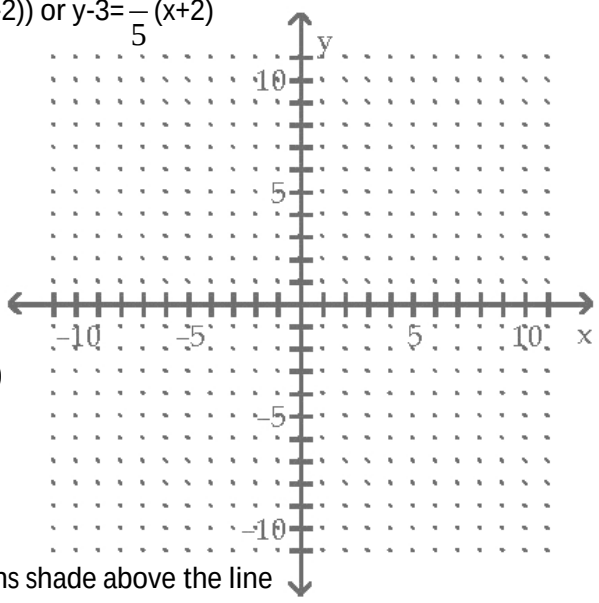
y-4= $\frac{1}{5}$(x-3). Note we could also use the point (-2,3) and get y-3=$\frac{1}{5}$(x-(-2)) or y-3=$\frac{1}{5}$(x+2)

9) *(4 points)* Graph the inequality in two variables x-y<4

-y<-x+4

y>x-4

First we graph the line y=x-4. The slope is m=1=1/1, y-intercept is (0, -4)



We plot (0, -4) then using the slope we graph the line **dashed**

Then we test a point that is not the line for example (0,0)

We plug x=0, y=0 in x-y<4 and get 0<4 a true statement which means shade above the line

(the part that contains (0,0))