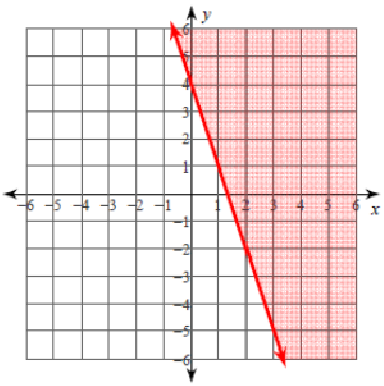
Math 20-1

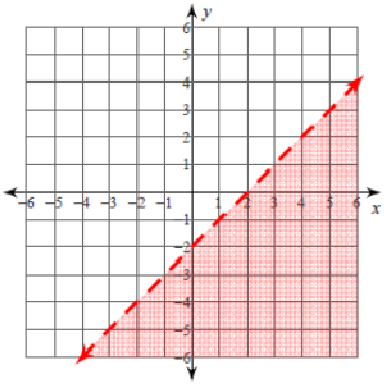
Lxx – Worksheet – 9.1 Linear Inequalities in Two Variables

Part 1 – Easy Questions *(from Kuta Software – Graphing Linear Inequalities 1)*

Q1: Determine the inequalities that corresponds to each graph.



$y \geq -3x + 4$

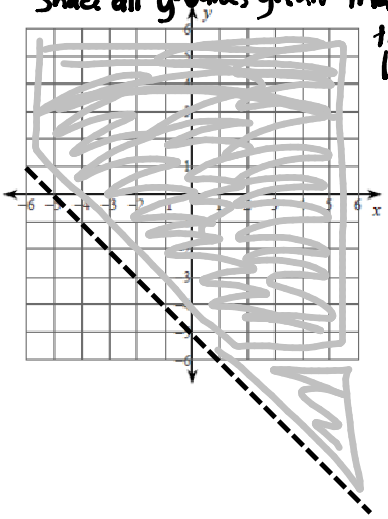


$y < x - 2$

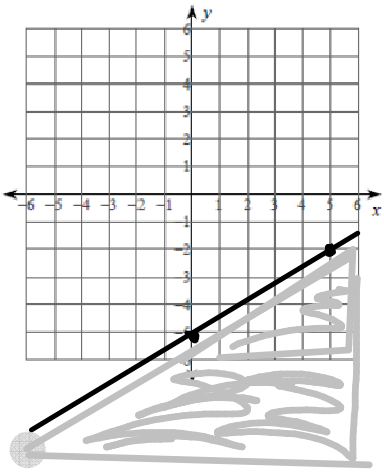
Q2: Graph each inequality.

$y > -x - 5$

Shade all y-values greater than the line.



$y \leq \frac{3}{5}x - 5$



Shade all y-values less than (or equal to) the line.

Part 2 – Textbook Questions

Pg 472 #1ad: Which of the ordered pairs are solutions to the given inequality?

$y < x + 3$

{ (7,10) , (-7,10) , (6,7) , (12,9) }

$10 < 7+3$
$10 < 10$
Nope

$10 < -7+3$
$10 < -4$
Nope

$7 < 6+3$
$7 < 9$
Yes!

$9 < 12+3$
$9 < 15$
Yes!

$2x + y \geq 6$

{ (0,0) , (3,1) , (-4,-2), (6,-4) }

$2(0)+(0) \geq 6$
$0 \geq 6$
Nope

$2(3)+(1) \geq 6$
$7 \geq 6$
Yes!

$4(-4)+(-2) \geq 6$
$-10 \geq 6$
Nope

$2(6)+(-4) \geq 6$
$8 \geq 6$
Yes!

Pg 472 #3ace: Consider each inequality.

- Express y in terms of x, if necessary. Identify the slope and y-intercept.
- Indicate whether the boundary should be a solid line or a dashed line.

$y \leq x + 3$

SOLID

$m = 1$
$b = 3$

$4x + y > 7$

$y > -4x + 7$

DASHED

$m = -4$
$b = 7$

$4x + 5y \geq 20$

$5y \geq -4x + 20$
$y \geq -\frac{4}{5}x + 4$

SOLID

$m = -\frac{4}{5}$
$b = 4$

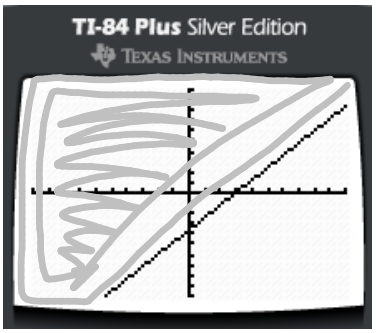
Pg 472 #5ac: Graph each inequality using technology.

$6x - 5y \leq 18$

$-5y \leq -6x + 18$

$\div(-5) \quad \div(-5) \quad \div(-5)$

$y \geq \frac{6}{5}x - \frac{18}{5}$

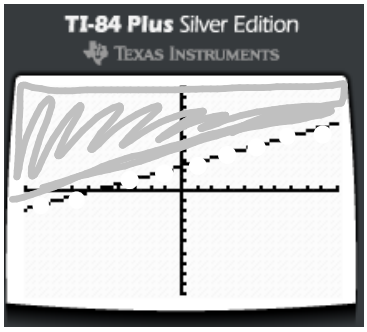


I manually colored and dotted the line

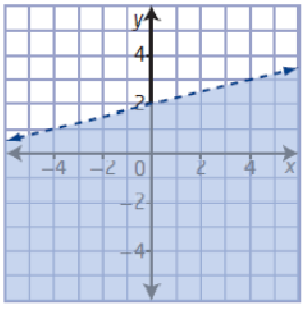
$-5x + 12y - 28 > 0$

$12y > 5x + 28$

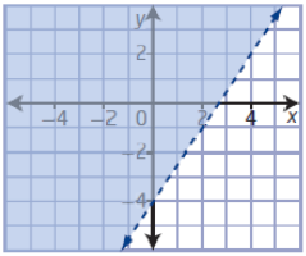
$y > \frac{5}{12}x + \frac{7}{3}$



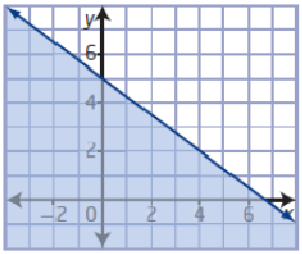
Pg 472 #9acd: Determine the inequality that corresponds to teach graph.



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



$y > \frac{3}{5}x - 4$



$y \leq -\frac{3}{4}x + 5$

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Pg 472 #11: Amaruq has a part-time job that pays her $12/h. She also sews baby moccasins and sells them for a profit of $12 each. Amaruq wants to earn at least $250/week.

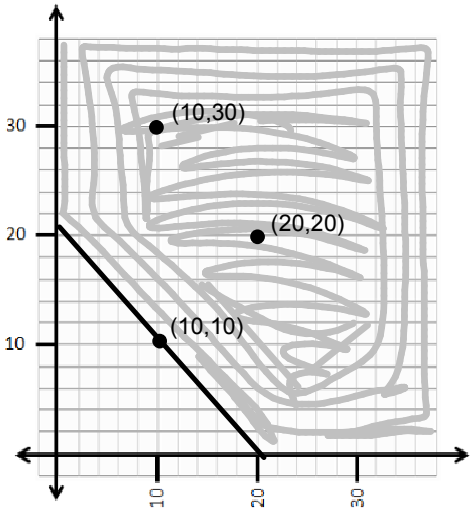
a. Write an inequality that represents the number of hours that Amaruq can work and the number of baby moccasins she can sell to earn at least $250. Include any restrictions on the variables.

Let x = number of hours worked
y: number of moccasins sold

Earnings = $12x + 12y$
We want more than or equal to 250.
$12x + 12y \geq 250$

b. Graph the inequality.

$12y \geq -12x + 250$
$y \geq -x + 20.8\overline{3}$



c. List three different ordered pairs in the solution.

Any point on the line or in the shaded region.
Ex: (10,10) (20,20) (10,30)

d. Give at least one reason that Amaruq would want to earn income from her part-time job as well as her sewing business, instead of focusing on one method only.

① If she lost job, still has income.
② If nobody is buying moccasins, still has income.

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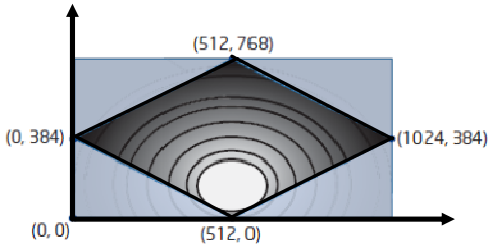
Pg 472 #17: Masha is a video game designer. She treats the computer screen like a grid. Each pixel on the screen is represented by a coordinate pair, with the pixel in the bottom left corner of the screen as (0,0). For one scene in a game she is working on, she needs to have a background like the one shown.



The shaded region on the screen is made up of four inequalities. What are the four inequalities?