Algebra 1B - Chapter 5 Test Review

Multiple Choice

Identify the choice that best completes the statement or answers the question.

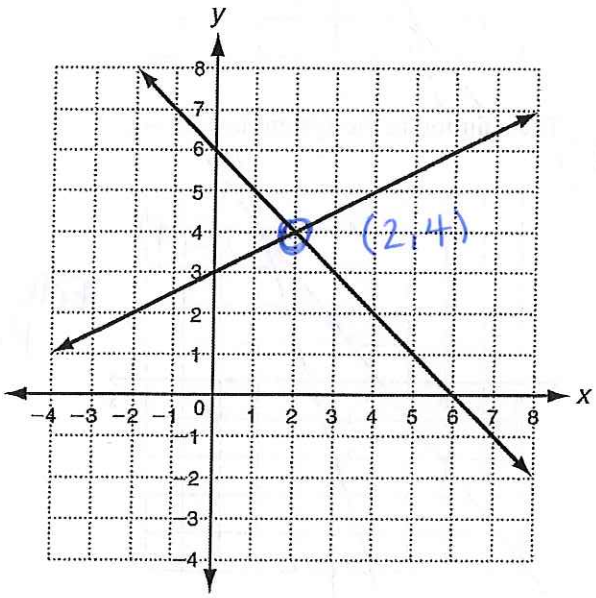
B 1. Which ordered pair is a solution of $\begin{cases} x - y = -3 \\ 2x + y = 0 \end{cases}$?

a. $(-3, 0)$
b. $(-1, 2)$
c. $(0, 0)$
d. $(1, 4)$

$x - y = -3$
$+ 2x + y = 0$
$3x = -3$
$\frac{3x}{3} = \frac{-3}{3}$
$x = -1$

$-1 - y = -3$
$+1 \quad +1$
$-y = -2$
$\frac{-y}{-1} = \frac{-2}{-1}$
$y = 2$

C 2. The graph of a system of linear equations is shown below. What is the solution of the system?



a. (0, 3)
b. (0, 6)
c. (2, 4)
d. (6, 0)

B 3. Which ordered pair is a solution of $\begin{cases} y = 0.5x + 2 \\ -y = 3 - x \end{cases}$?

$y = 0.5x + 2$
$y = (-3 + x)$

a. (6, 5)
b. (10, 7)
c. (11, 8)
d. (17, 14)

$-3 + x = 0.5x + 2$
$+3 \qquad +3$
$x = 0.5x + 5$
$-0.5x \quad -0.5x$
$\frac{0.5x}{0.5} = \frac{5}{0.5}$
$x = 10$

$y = 0.5(10) + 2$
$= 5 + 2$
$= 7$

OR you could plug in different points & see what one is true

D 4. Use a graph to solve the system $\begin{cases} -5x+4y=6 \\ 3x-y=2 \end{cases}$

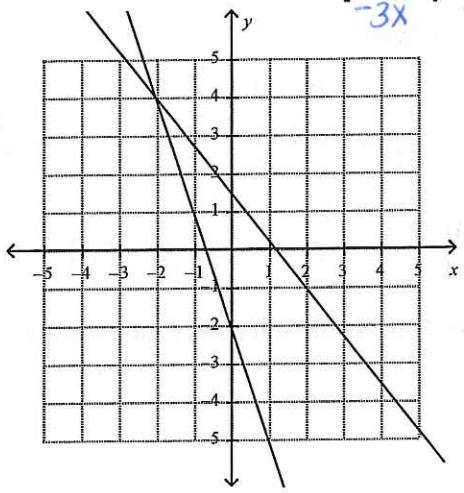
$+5x \quad +5x$

$-3x \quad -3x$

$\frac{4y}{4} = \frac{5x}{4} + \frac{6}{4}$ $\quad y = \frac{5}{4}x + 1.5$

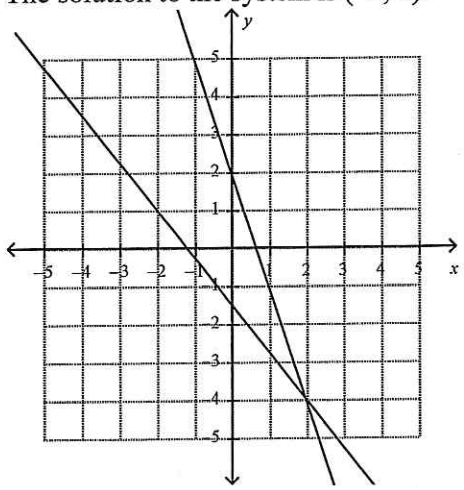
$\frac{-y}{-1} = \frac{-3x}{-1} + \frac{2}{-1}$ $\quad y = 3x - 2$

a.



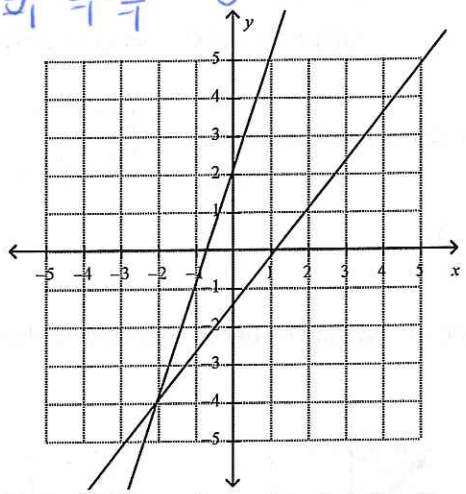
The solution to the system is (–2, 4).

b.



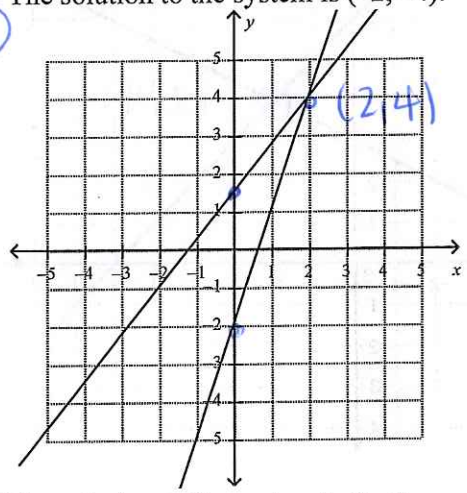
The solution to the system is (2, –4).

c.



The solution to the system is (–2, –4).

d.



The solution to the system is (2, 4).

Both have positive slopes

D 5. solve the system.

$\begin{cases} x = 1+y \\ 3x-6y=-12 \end{cases}$

$3(1+y)-6y=-12$

$3+3y-6y=-12$

$3-3y=-12$

$-3 \quad -3$

$\frac{-3y}{-3} = \frac{-15}{-3}$ $\quad y=5$

$x = 1+5 = 6$

$(6,5)$

a. $(-2,-1)$

b. $(2,3)$

c. $\left(-\frac{2}{3}, -1\frac{2}{3}\right)$

d. $(6,5)$

B 6. Solve $\begin{cases} y = x+3 \\ 2x+y=-6 \end{cases}$ by substitution.

$2x + x + 3 = -6$

$3x + 3 = -6$

$-3 \quad -3$

$\frac{3x}{3} = \frac{-9}{3}$ $\quad x=-3$

$y = -3+3$

$y=0$

$(-3,0)$

a. $(-9,-6)$

b. $(-3,0)$

c. $(-1,2)$

d. $(-3,6)$

C 7. Solve $\begin{cases} y = 4x - 1 \\ y = 3x + 6 \end{cases}$ by substitution.

$4x - 1 = 3x + 6$ (+1, +1)

$4x = 3x + 7$ (−3x, −3x)

$x = 7$

$y = 4(7) - 1 = 27$

$(7, 27)$

a. $(7, -6)$
b. $(1, 3)$
c. $(7, 27)$
d. $(1, 5)$

B 8. Solve $\begin{cases} 3x + y = -3 \\ y = x + 5 \end{cases}$ by substitution. Express your answer as an ordered pair.

$3x + x + 5 = -3$

$4x + 5 = -3$ (−5, −5)

$\frac{4x}{4} = \frac{-8}{4}$

$x = -2$

$y = -2 + 5$

$y = 3$

$(-2, 3)$

a. $(3, -2)$
b. $(-2, 3)$
c. $(-\frac{4}{3}, 1)$
d. $(-\frac{8}{3}, -3)$

___ 9. Solve $\begin{cases} 2a - b + c = -5 \\ a - b = -2 \\ 2a + b = 5 \end{cases}$ by substitution.

a. $a = -2, b = 0, c = -2$
b. $a = 1, b = 3, c = -6$
c. $a = 1, b = 3, c = -4$
d. $a = -2, b = 0, c = -1$

A 10. Solve $\begin{cases} x + y = -1 \\ x - y = -7 \end{cases}$ by elimination.

$2x = -8$ (÷2, ÷2)

$x = -4$

$-4 + y = -1$ (+4, +4)

$y = 3$

$(-4, 3)$

a. $(-4, 3)$
b. $(-3, 2)$
c. $(3, -4)$
d. $(2, -3)$

B 11. Solve by elimination: $\begin{cases} 3x + 2y = -1 \\ x - 2y = 11 \end{cases}$.

$4x = 10$ (÷4, ÷4)

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

$\frac{5}{2} - 2y = 11$ (−5/2, −5/2)

$-2y = \frac{17}{2}$ (÷−2)

$y = -\frac{17}{4}$

a. $(-5, 8)$
b. $\left(\frac{5}{2}, -\frac{17}{4}\right)$
c. $(3, -4)$
d. $\left(4, -\frac{7}{2}\right)$

A 12. Use elimination to solve the system $\begin{cases} 3x - 3y = 3 \\ 4x + 3y = 53 \end{cases}$.

$7x = 56$ (÷7, ÷7)

$x = 8$

$3(8) - 3y = 3$

$24 - 3y = 3$ (−24, −24)

$-3y = -21$ (÷−3, ÷−3)

$y = 7$

a. $(8, 7)$
b. $(0, -1)$
c. $(7, 8)$
d. $(-2, -3)$

D 13. For which would you draw a dashed boundary line and shade to the left?

a. $x \geq -4$
b. $x > -4$
c. $x \leq -4$
d. $x < -4$

A

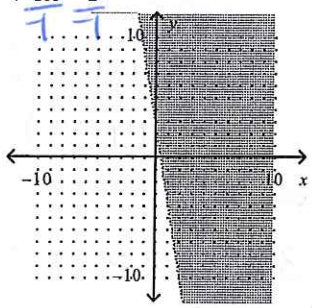
14. Graph.

$-y < 6x - 3$

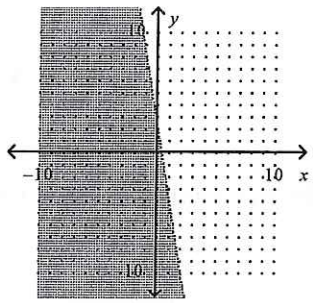
$y > -6x + 3$

has a negative slope & a dashed line

a.



c.



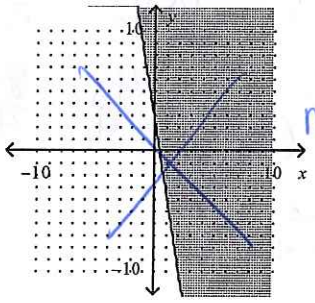
$0 > -6(0) + 3$

$0 > 3$

False

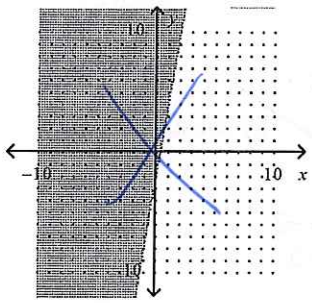
Shade away from (0,0)

b.



not dashed

d.

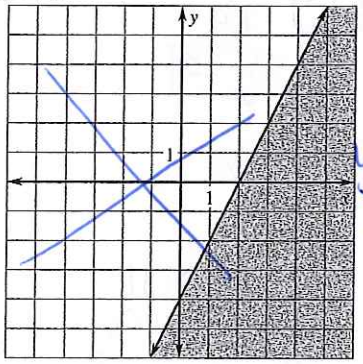


not neg. slope

D

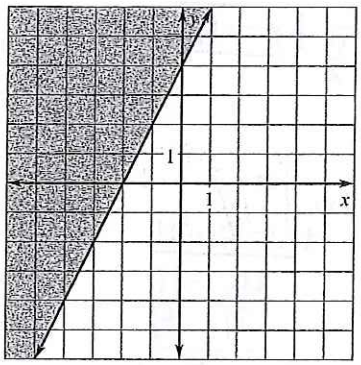
15. Graph: $y \leq 2x + 4$

a.

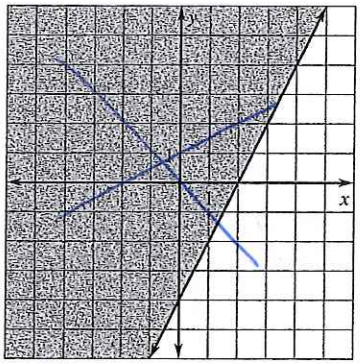


y-int not at 4

c.



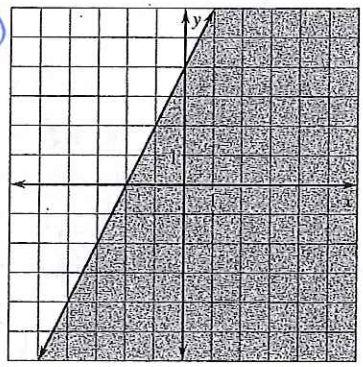
b.



y-int not at 4

y-intercept at 4

d.



$0 \leq 2(0) + 4$

$0 \leq 4$

True

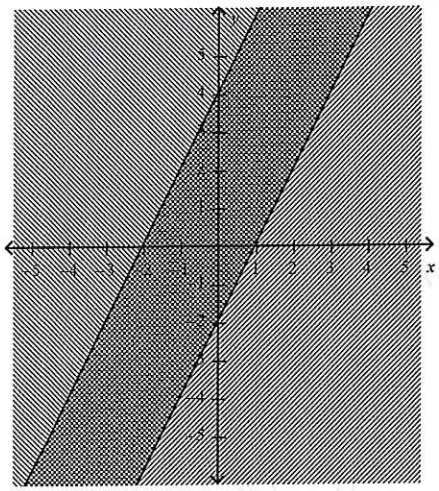
Shade over (0,0)

$0 \geq 2(0)+4$
$0 \geq 4$ False (Shade away from (0,0))

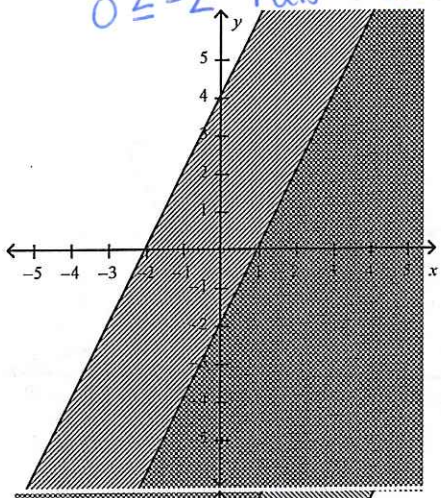
B 16. Graph the system of linear inequalities $\begin{cases} y \geq 2x+4 \\ y \leq 2x-2 \end{cases}$.

$0 \leq 2(0)-2$
$0 \leq -2$ False (Shade away from (0,0))

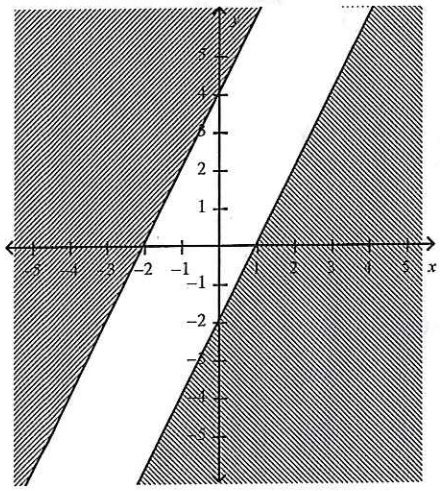
a.



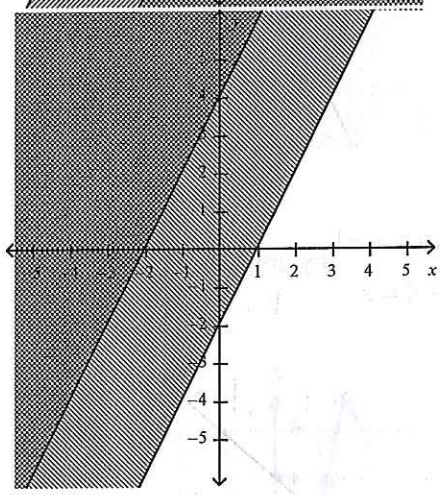
c.



(b.)



d.



Short Answer

1. Tell whether $(-5,-6)$ is a solution of $\begin{cases} x-2y=7 \\ y-x=-1 \end{cases}$.

or plug in → & see if it makes the equations true

$x-2y=7$
$+ -x+y=-1$
$-y=6$
$\frac{-y}{-1}=\frac{6}{-1}$
$y=-6$

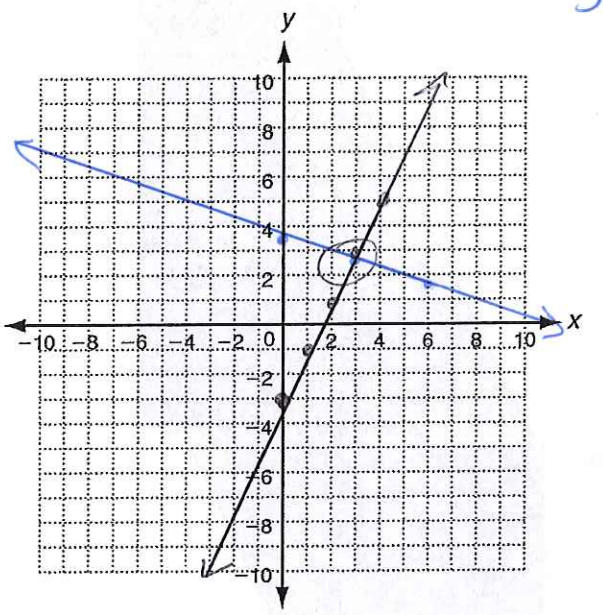
$x-2(-6)=7$
$x+12=7$
$-12 \quad -12$
$x=-5$

$(-5,-6)$

Yes

2. Solve $\begin{cases} x + 3y = 11 \\ 2x - y = 3 \end{cases}$ by graphing.

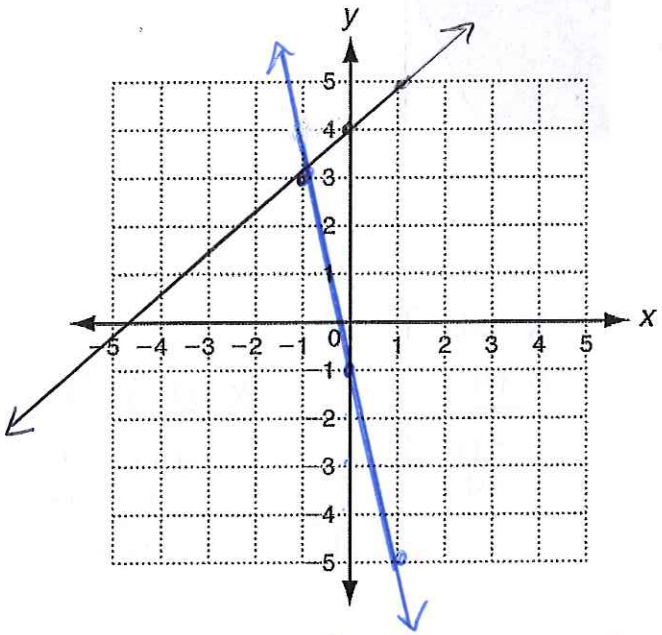
$x+3y=11$
$-x \quad -x$
$\frac{3y}{3} = \frac{-x}{3} + \frac{11}{3}$
$y = -\frac{1}{3}x + 3.7$



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

$\approx (3, 2.7)$

3. Solve $\begin{cases} 4x + y = -1 \\ y - 4 = x \end{cases}$ by graphing.



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

$y - 4 = x$
$+4 \quad +4$
$y = x + 4$

$(-1, 3)$

4. Solve by substitution $\begin{cases} 3x - 2 = y \\ y - 2x = -5 \end{cases}$.

$3x - 2 - 2x = -5$
$x - 2 = -5$
$+2 \quad +2$
$\boxed{x = -3}$

$y = 3(-3) - 2$
$= -11$

$(-3, -11)$

5. Solve $\begin{cases} y = \frac{1}{2}x + 5 \\ 2y = x - 24 \end{cases}$.

$2(\frac{1}{2}x+5) = x-24$

$x+10 = x-24$

$-x \quad -x$

$10 \neq -24$

False

No solution

6. Solve by substitution $\begin{cases} -2x - y = 3 \\ y - 12 = x \end{cases}$.

$-2(y-12)-y=3$

$-2y+24-y=3$

$-3y+24=3$

$-24 \quad -24$

$\frac{-3y}{-3} = \frac{-21}{-3}$

$y=7$

$x=7-12$

$x=-5$

$(-5,7)$

7. Solve by elimination $\begin{cases} x - 2y = -7 \\ 4x + 2y = 22 \end{cases}$.

$+$

$5x = 15$

$\frac{5x}{5} = \frac{15}{5}$

$x=3$

$3-2y=-7$

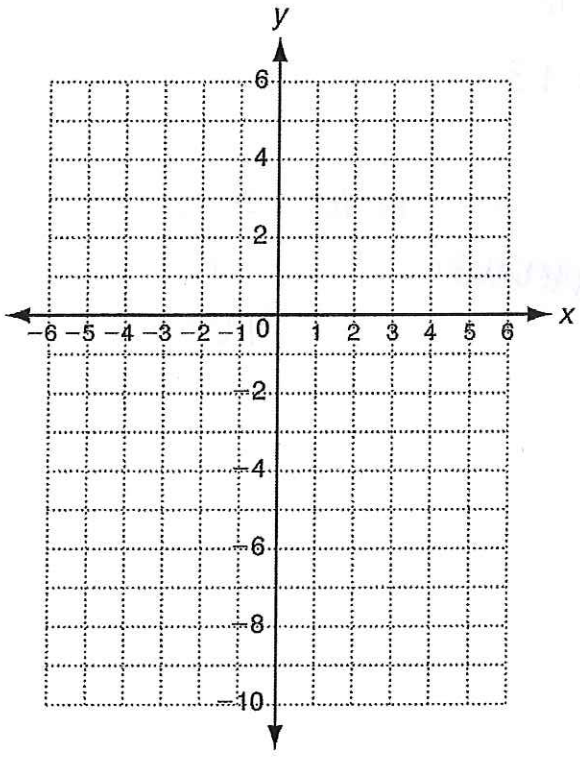
$-3 \quad -3$

$\frac{-2y}{-2} = \frac{-10}{-2}$

$y=5$

$(3,5)$

8. Solve by any method: $\begin{cases} y - 3x = 2 \\ y = -2x - 8 \end{cases}$.



$-2x-8-3x=2$

$-5x-8=2$

$+8 \quad +8$

$\frac{-5x}{-5} = \frac{10}{-5}$

$x=-2$

$y=-2(-2)-8$

$=4-8$

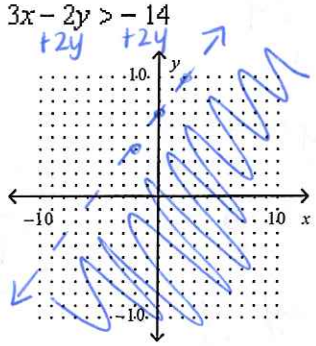
$y=-4$

$(-2,-4)$

9. Graph.

$3x - 2y > -14$

$+2y \quad +2y$



$3x > 2y - 14$

$+14 \quad +14$

$3x + 14 > 2y$

$\frac{2y}{2} < \frac{3x}{2} + \frac{14}{2}$

$y < \frac{3}{2}x + 7$

(0,0)

$3(0) - 2(0) > -14$

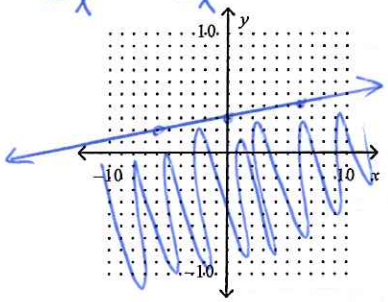
$0 > -14$

true

10. Graph.

$x - 6y \geq -18$

$-x \quad -x$



$\frac{-6y}{-6} \leq \frac{-x - 18}{-6}$

$y \leq \frac{1}{6}x + 3$

test (0,0) → $0 - 6(0) \geq -18$

$0 \geq -18$

true