

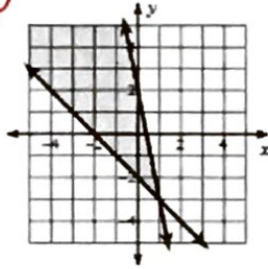
Unit 4 Test Review (Lessons 17-24)

Name Key Per _____

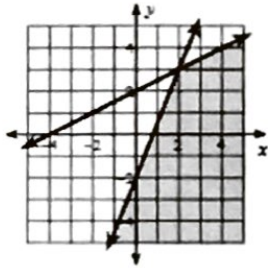
Which graph goes with the given system of Inequalities?

1) $y \leq -5x + 2$
 $y \geq -x - 2$

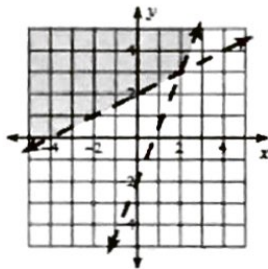
(A)



B)



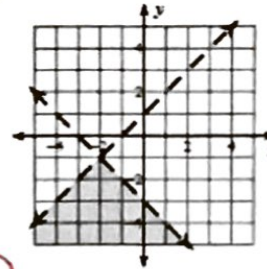
C)



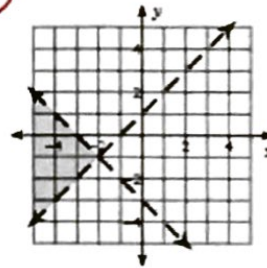
$-y < -x - 1$
 $y > x + 1$

2) $x - y < -1$
 $x + y < -3 \rightarrow y < -x - 3$

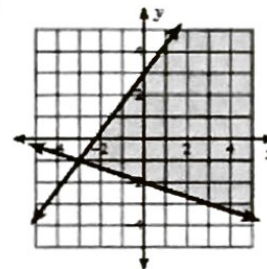
A)



(B)

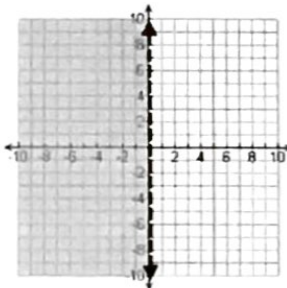


C)



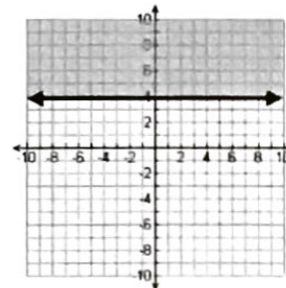
#3-4 Write an inequality that represents each graph.

3.



$x < 0$

4.



$y \geq 4$

5. What is the solution for a system of linear equations that has the same slope and same y-intercept?

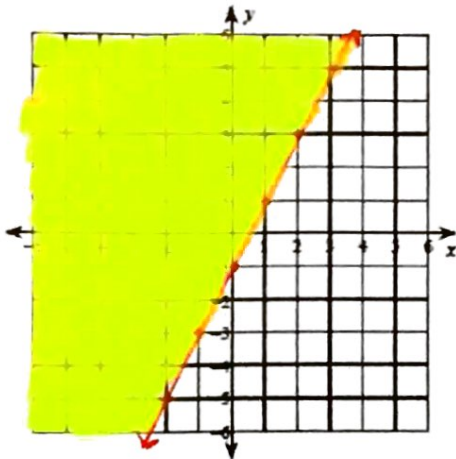
\leftrightarrow Infinitely many solutions

6. What is the solution for a system of linear equations that has the same slope and different y-intercepts?

\leftrightarrow No solution

From #7-9 graph each inequality.

7) $y \geq 2x - 1$



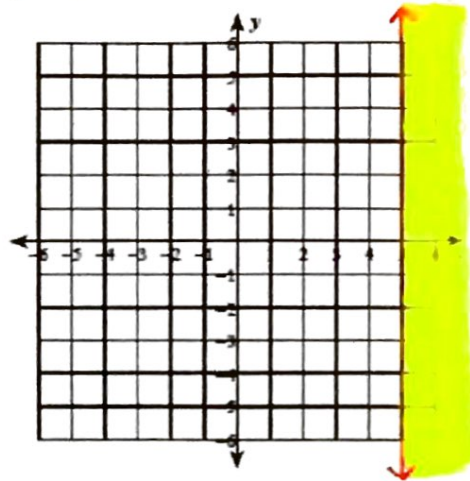
Test (0,0)

$$0 \geq 2(0) - 1$$

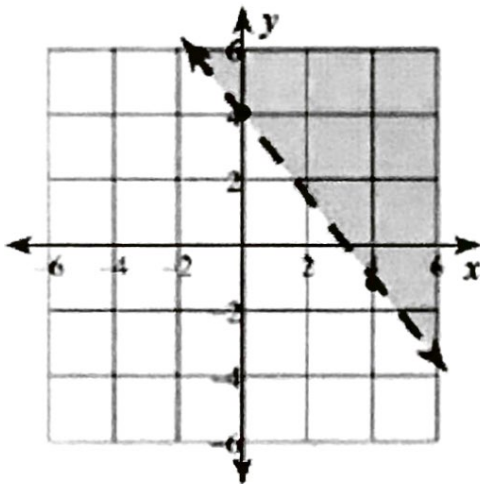
$$0 \geq -1$$

True

8) $x \geq 5$



9) Write an inequality that describes the graph below.



Inequality: $y > -\frac{5}{4}x + 4$

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

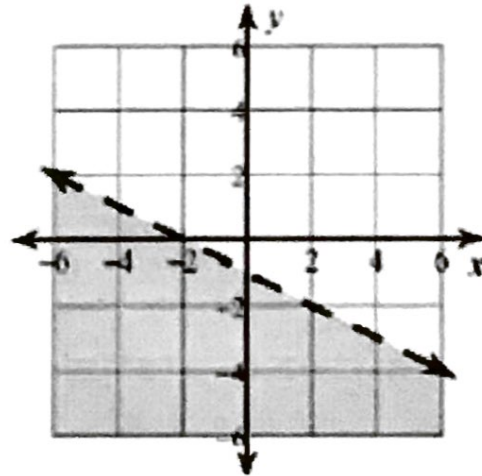
$$b = 4$$

Test (0,0) → want false

$$y \square -\frac{5}{4}x + 4$$

$$0 > 4$$

10) Write an inequality that describes the graph below.



Inequality: $y < -\frac{1}{2}x - 1$

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

$$b = -1$$

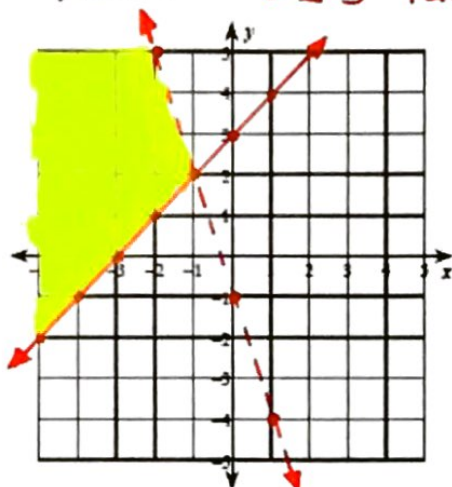
Test (0,0) → want false

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

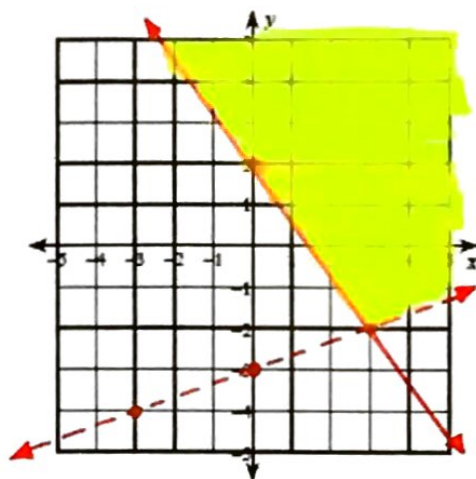
$$0 < -1$$

Graph the systems of inequalities.

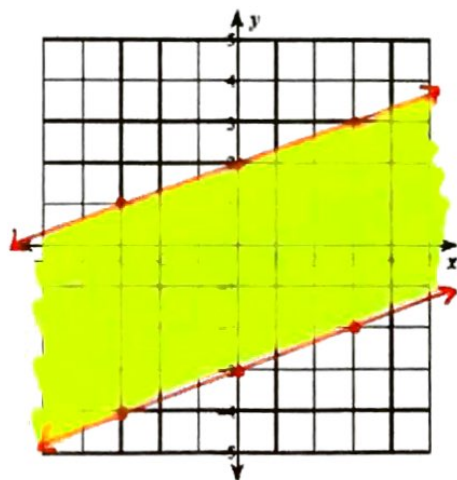
11) $y < -3x - 1$ Test (0,0) $0 < -1$ False
 $y \geq x + 3$ $0 \geq 3$ False



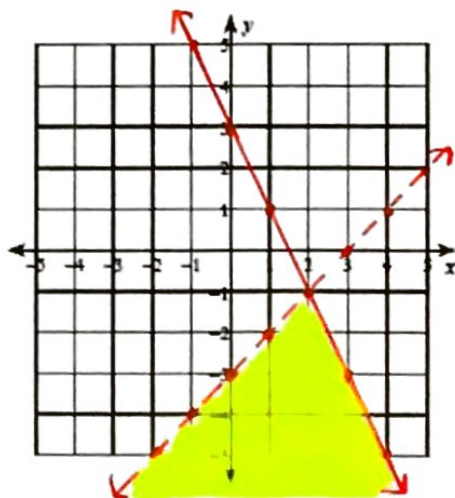
12) $y \geq -\frac{4}{3}x + 2$ Test (0,0) $0 \geq 2$ False
 $y > \frac{1}{3}x - 3$ $0 > -3$ True



13) $y \leq \frac{1}{3}x + 2$ Test (0,0) $0 \leq 2$ True
 $y \geq \frac{1}{3}x - 3$ $0 \geq -3$ True

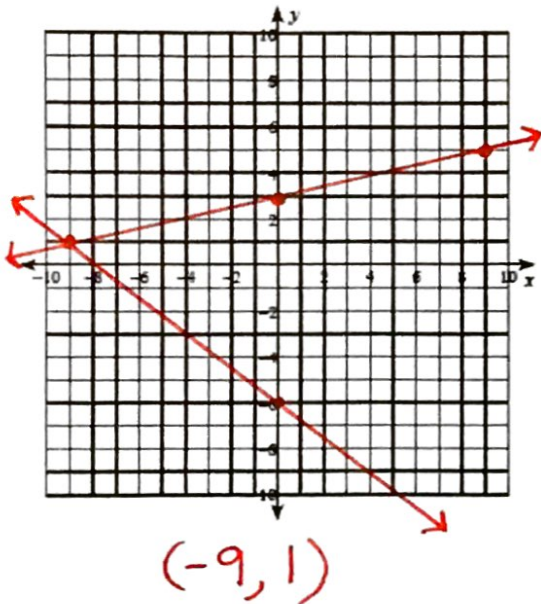


14) $x - y > 3$ $-y > -x + 3$ Test (0,0) $0 < -3$ False
 $2x + y < 3$ $y < x - 3$ $0 < 3$ True

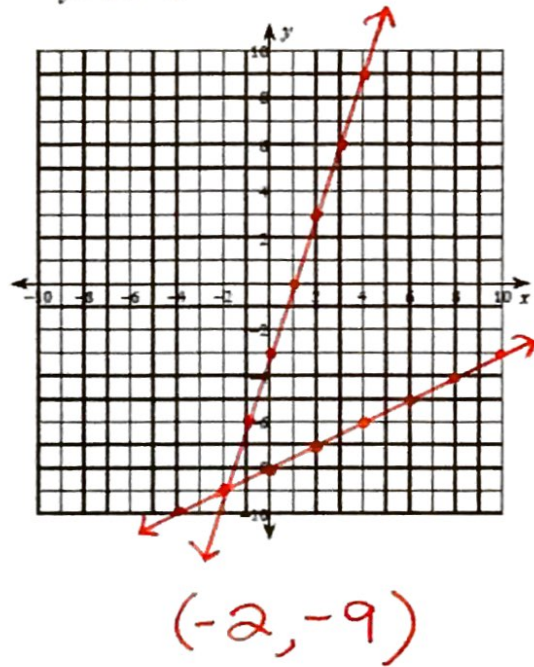


Solve each system by graphing.

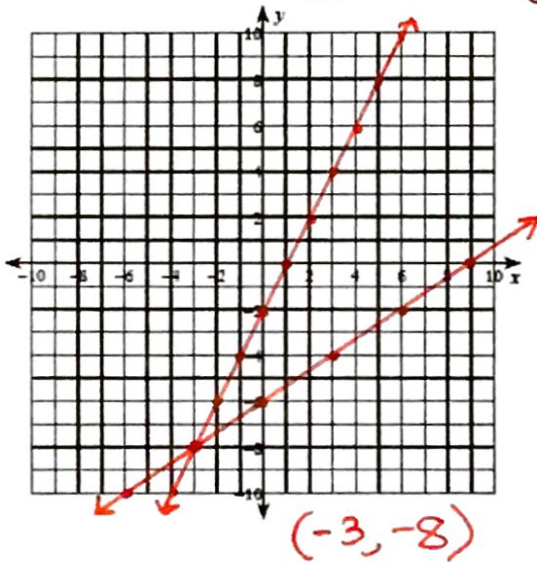
$$15) \begin{cases} y = \frac{2}{9}x + 3 \\ y = -\frac{7}{9}x - 6 \end{cases}$$



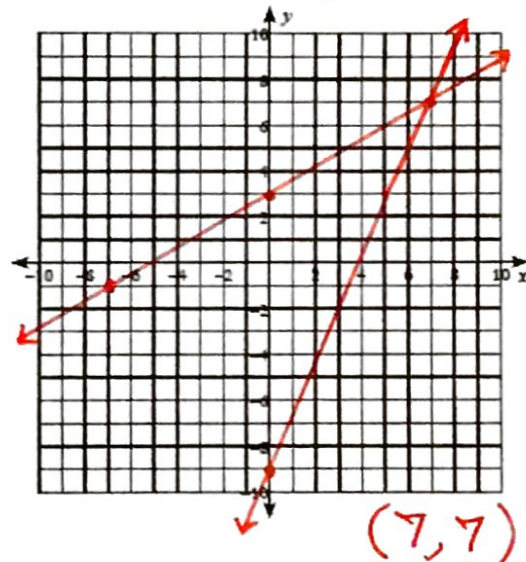
$$16) \begin{cases} y = \frac{1}{2}x - 8 \\ y = 3x - 3 \end{cases}$$



$$17) \begin{cases} 2x - y = 2 \rightarrow -y = -2x + 2 \rightarrow y = 2x - 2 \\ 2x - 3y = 18 \rightarrow -3y = -2x + 18 \rightarrow y = \frac{2}{3}x - 6 \end{cases}$$



$$18) \begin{cases} 4x - 7y = -21 \rightarrow -7y = -4x - 21 \rightarrow y = \frac{4}{7}x + 3 \\ 16x - 7y = 63 \rightarrow -7y = -16x + 63 \rightarrow y = \frac{16}{7}x - 9 \end{cases}$$



19. John is messing with his little sister. He tells her that he is holding \$1.95 behind his back and that he is holding exactly 9 coins. He says, "I'll only give you the money if you can tell me how many dimes and quarters I have!" Help his little sister get the money. How many of each type of coin is John holding? Set up a system of equations and solve.

d = # of dimes
 q = # of quarters

$$\begin{aligned} d + q &= 9 \xrightarrow{\times(-10)} (d + q = 9) \rightarrow \begin{array}{r} -10d - 10q = -90 \\ 10d + 25q = 195 \\ \hline 15q = 105 \\ q = 7 \end{array} \\ 0.1d + 0.25q &= 1.95 \rightarrow 10d + 25q = 195 \end{aligned}$$

$$\begin{aligned} q &= 7 \\ d &= 2 \end{aligned}$$

$$\begin{aligned} 15q &= 105 \\ q &= 7 \end{aligned}$$

Solve the following systems of equations by using substitution or elimination.

$$\begin{array}{r} 20. \quad (-2x + 4y = 18) \times 5 \\ \quad \quad (5x + 5y = -30) \times 2 \\ \hline \quad \quad -10x + 20y = 90 \\ \quad \quad 10x + 10y = -60 \\ \hline \quad \quad 30y = 30 \\ \quad \quad y = 1 \end{array}$$

Back Sub

$$\begin{aligned} 5x + 5(1) &= -30 \\ 5x + 5 &= -30 \\ 5x &= -35 \\ x &= -7 \end{aligned}$$

Solution: $(-7, 1)$

$$21. \quad \begin{array}{l} x + 2y = 4 \rightarrow x = 4 - 2y \\ 2x - 5 = -4y \end{array}$$

$$\begin{aligned} 2(4 - 2y) - 5 &= -4y \\ 8 - 4y - 5 &= -4y \\ -4y + 3 &= -4y \\ 3 &\neq 0 \end{aligned}$$

Solution: No Solution

$$\begin{array}{l} 22. \quad y = 5x - 2 \\ \quad \quad -3x + 6y = -12 \\ \quad \quad -3x + 6(5x - 2) = -12 \\ \quad \quad -3x + 30x - 12 = -12 \\ \quad \quad 27x = 0 \\ \quad \quad x = 0 \end{array}$$

Back Sub

$$\begin{aligned} y &= 5(0) - 2 \\ y &= -2 \end{aligned}$$

Solution: $(0, -2)$

$$23. \quad \begin{array}{l} 2x + y = 20 \\ 6x = 5y + 12 \end{array} \rightarrow \begin{array}{l} (2x + y = 20) \times 5 \\ 6x - 5y = 12 \end{array} \rightarrow \begin{array}{l} 10x + 5y = 100 \\ 6x - 5y = 12 \\ \hline 16x = 112 \end{array}$$

Back Sub

$$\begin{aligned} 6(7) &= 5y + 12 \\ 42 &= 5y + 12 \\ 30 &= 5y \\ 6 &= y \end{aligned}$$

Solution: $(7, 6)$

