

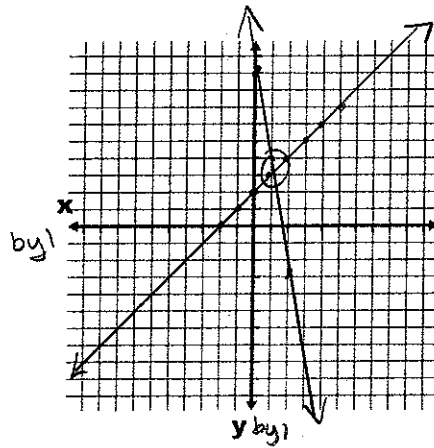
Chapter 5 Study Guide

Solve the system of linear equations by graphing. Check your solution.

1. $y = x + 2$
 $y = -6x + 9$

$(1, 3)$

Check:
 $3 \stackrel{?}{=} 1 + 2$
 $3 = 3 \checkmark$
 $3 \stackrel{?}{=} -6(1) + 9$
 $3 = -6 + 9$
 $3 = 3 \checkmark$



Solve the system of linear equations by substitution. Check your solution.

2. $-4x + y = 6$
 $-5x - y = 21$

$y = 4x + 6$

$(-3, -6)$

$-5x - (4x + 6) = 21$
 $-5x - 4x - 6 = 21$
 $-9x - 6 = 21$
 $-\frac{9x}{-9} = \frac{27}{-9}$
 $x = -3$

Check:

$-4(-3) + (-6) \stackrel{?}{=} 6$
 $12 - 6 = 6$
 $6 = 6 \checkmark$
 $-5(-3) - (-6) \stackrel{?}{=} 21$
 $15 + 6 = 21$
 $21 = 21 \checkmark$

$y = 4(-3) + 6$
 $y = -12 + 6$
 $y = -6$

Solve the system of linear equations by elimination. Check your solution.

3. $-4x - 2y = -12$
 $4x + 8y = -24$

$(6, -6)$

4. $(-7x - 8y = 9) \cdot -4$
 $(-4x + 9y = -22) \cdot 7$

Check:

$-4(6) - 2(-6) \stackrel{?}{=} -12$
 $-24 + 12 \stackrel{?}{=} -12$
 $-12 = -12 \checkmark$
 $4(6) + 8(-6) \stackrel{?}{=} -24$
 $24 - 48 = -24$
 $-24 = -24 \checkmark$

$28x + 32y = -36$
 $-28x + 63y = -154$

 $95y = -190$
 $y = -2$
 $-7x - 8(-2) = 9$
 $-7x + 16 = 9$
 $-7x = -7$
 $x = 1$
 $(1, -2)$

Check:
 $-7(1) - 8(-2) \stackrel{?}{=} 9$
 $-7 + 16 \stackrel{?}{=} 9$
 $9 = 9 \checkmark$
 $-4(1) + 9(-2) \stackrel{?}{=} -22$
 $-4 - 18 = -22$
 $-22 = -22 \checkmark$

Compare the slopes and y-intercepts of the graphs of the equations in the linear system to determine whether the system has one solution, no solution, or infinitely many solutions. Explain

5. $-3x + 3y = 4$
 $-x + y = 3$

$3y = 3x + 4$
 $y = x + \frac{4}{3}$ same slope, diff. y-int.
 $y = x + 3$
 No solution

6. $2x + 3y = -6$
 $-4x - 6y = 12$

$3y = -2x - 6$
 $y = \frac{-2x - 6}{3}$
 $-6y = 4x + 12$
 $y = \frac{-2}{3}x - 2$
 Same slope Same y-int Same line
 Infinitely many solutions.

7. $x + y = 7$
 $2x - 3y = -21$

$y = -x + 7$
 $-3y = 2x - 21$
 $y = \frac{2}{3}x + 7$
 Different slopes - the lines will intersect.
 One solution.

8. You spend \$264 on clothes. Shirts cost \$24 and pants cost \$32. You buy a total of 9 items.

a. Write a system of linear equations that represents this situation.

$x = \# \text{ of shirts}$
 $y = \# \text{ of pants}$

$x + y = 9$
 $24x + 32y = 264$

b. Solve the system using the method of your choice. Interpret your solution.

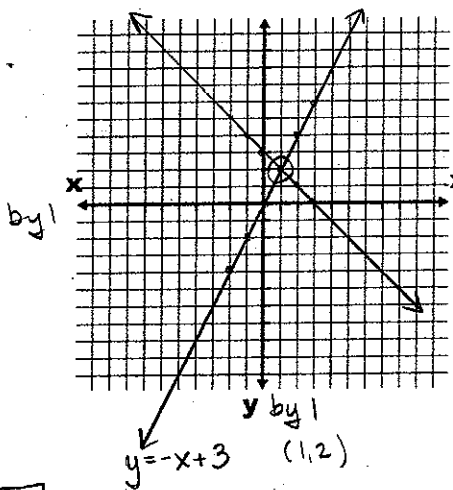
$y = 9 - x$
 $24x + 32(9 - x) = 264$
 $24x + 288 - 32x = 264$
 $-8x = -24$
 $x = 3$

$y = 9 - 3$ check
 $y = 6$
 $3 + 6 = 9$
 $9 = 9 \checkmark$
 $(3, 6)$
 $24(3) + 32(6) = 264$
 $72 + 192 = 264$

You buy 3 shirts and 6 pants.

Solve the equation by graphing. Check your solutions.

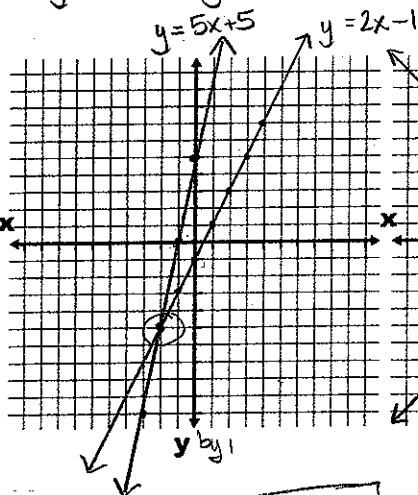
9. $2x = -x + 3$
 $y = 2x$ $y = -x + 3$



$x = 1$

Check:
 $2(1) = -1 + 3$
 $2 = 2 \checkmark$

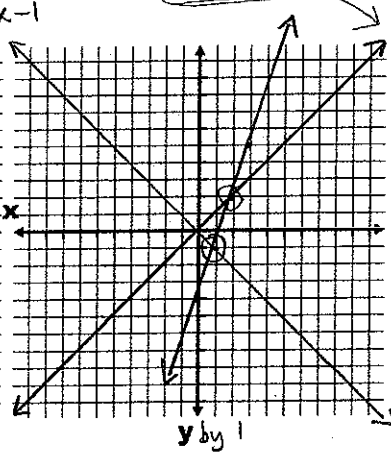
10. $2x - 1 = 5x + 5$
 $y = 2x - 1$ $y = 5x + 5$



$(-2, -5)$ $x = -2$

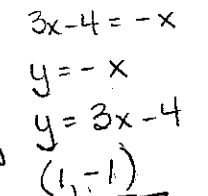
Check:
 $2(-2) - 1 = 5(-2) + 5$
 $-4 - 1 = -10 + 5$
 $-5 = -5 \checkmark$

11. $|3x - 4| = |x|$
 $3x - 4 = x$ or $3x - 4 = -x$



$(2, 2)$
 $x = 2$

Check:
 $|3(2) - 4| = |2|$
 $|6 - 4| = |2|$
 $|2| = |2|$
 $2 = 2 \checkmark$



$(1, -1)$
 $x = 1$

Check:
 $|3(1) - 4| = |1|$
 $|-1| = |1|$
 $1 = 1 \checkmark$