

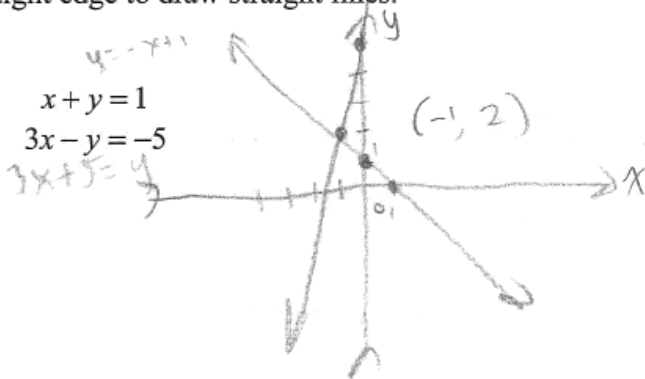
Algebra Chapter 7 Practice Quiz

Work together. There are very few questions, so please do your best with your partners to get each problem solved. Please ask questions any time you get stuck - no reason to be embarrassed!

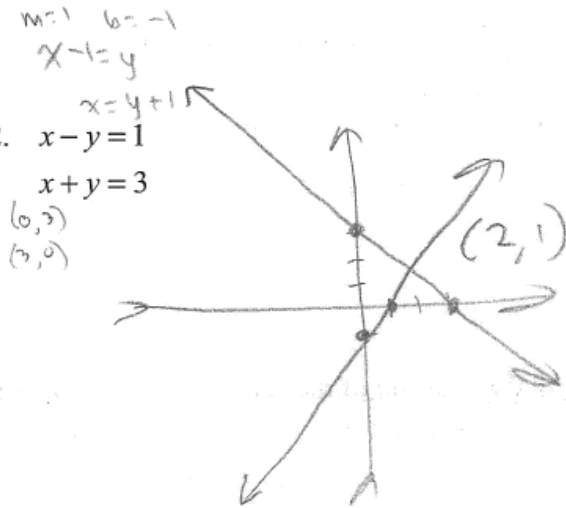
KEY

Find the solution to the system by graphing. Use a straight edge to draw straight lines.

1. $x + y = 1$
 $3x - y = -5$



2. $x - y = 1$
 $x + y = 3$



Use substitution to solve the linear system.

Note: solving l_1 for x would have been faster. I guessed wrong.

3. $x + 4y = -1$
 $2x - y = 7$

using $l_2: 2x - y = 7$
 $+y + 4$
 $2x = y + 7$
 $-7 - 7$
 $2x - 7 = y$
 Back into $l_2:$
 $2(3) - 7 = y$
 $6 - 7 = y$
 $-1 = y$
 $x = 3$
 $9x = 27$
 $x = 3$
Sol'n (3, -1)

4. $3x - y = 15$ using $l_2: x + 2y = -2$
 $x + 2y = -2$
 $x = -2y - 2$

Into $l_1: 3x - y = 15$
 $3(-2y - 2) - y = 15$
 $-6y - 6 - y = 15$
 $-7y - 6 = 15$
 $-7y = 21$
 $y = -3$
 Sol'n (4, -3)

Back into $l_2:$
 $x = -2(-3) - 2$
 $x = 6 - 2$
 $x = 4$

5. $x - 4y = 6$ using $l_1: x - 4y = 6$
 $2x + y = -4$

$x = 4y + 6$
 Into $l_2: 2(4y + 6) + y = -4$
 $8y + 12 + y = -4$
 $9y = -16$
 $y = -\frac{16}{9}$
 Sol'n $(-\frac{16}{9}, -\frac{10}{9})$

Back into $l_1:$
 $x = 4(-\frac{16}{9}) + 6$
 $9x = 4(-16) + 54$
 $9x = -64 + 54$
 $9x = -10$
 $x = -\frac{10}{9}$

Solve by linear combinations.

6. $3x - 4y = 21$ $\{l_1: 3x - 4y = 21$
 $4x + 2y = 6$ $\{l_2: 8x + 4y = 12$

$11x = 33$
 $x = 3$
 Into $l_2: 4(3) + 2y = 6$
 $12 + 2y = 6$
 $2y = -6$
 $y = -3$
 Sol'n (3, -3)

Solve by linear combinations.

$$7. \begin{cases} 4x+3y=-2 \\ 3x+2y=-3 \end{cases} \quad \begin{cases} 2(l_1): 8x+6y=-4 \\ -3(l_2): -9x-6y=9 \end{cases}$$

$$\begin{aligned} \text{Into } l_2: 3(5)+2y &= -3 & -x &= -5 \\ 15+2y &= -3 & x &= 5 \\ 2y &= -18 & \text{Sol'n} & \\ y &= -9 & & (5, -9) \end{aligned}$$

$$8. \begin{cases} 3x+2y=-5 \\ 4x-3y=16 \end{cases} \quad \begin{cases} 3(l_1): 9x+6y=-15 \\ 2(l_2): 8x-6y=32 \end{cases}$$

$$\begin{aligned} 17x &= 17 & x &= 1 \\ \text{Into } l_1: 3(1)+2y &= -5 & \text{Sol'n} & \\ 3+2y &= -5 & & (1, -4) \\ 2y &= -8 & & \\ y &= -4 & & \end{aligned}$$

Solve the linear system by any method.

$$9. \begin{cases} 3x-2y=3 \\ 6x+2y=3 \end{cases} \quad \begin{aligned} \text{Into } l_1: 3\left(\frac{2}{3}\right)-2y &= 3 \\ 2-2y &= 3 \\ -2y &= 1 \\ y &= -\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 9x &= 6 \\ x &= \frac{2}{3} \end{aligned}$$

Sol'n $\left(\frac{2}{3}, -\frac{1}{2}\right)$

$$10. \begin{cases} 5x-2y=3 \\ -x+6y=-2 \end{cases} \quad \text{Partial substitution of } 2y \text{ from } l_1 \text{ into } l_2.$$

$$\begin{aligned} \text{In } l_1: 5x-2y &= 3 & \text{Back to } l_1: & \\ -2y &= -5x+3 & 2y &= 5x-3 \\ 2y &= 5x-3 & 2y &= 5\left(\frac{1}{2}\right)-3 \\ \text{Into } l_2: -x+6y &= -2 & 4y &= 5(1)-6 \\ -x+3(2y) &= -2 & 4y &= 5-6 \\ -x+3(5x-3) &= -2 & 4y &= -1 \\ -x+15x-9 &= -2 & y &= -\frac{1}{4} \\ 14x-9 &= -2 & \text{Sol'n } & \left(\frac{1}{2}, -\frac{1}{4}\right) \\ 14x &= 7 & & \\ x &= \frac{1}{2} & & \end{aligned}$$

11. Determine if the system has no solutions, one solution, or many solutions.

$$\begin{cases} 3x-y=-13 \\ 3x-y=-13 \end{cases}$$

$$0+0=0$$

Always true
so infinitely
many solutions

12. Find the solution of the system, if it exists.

$$\begin{cases} 7x-y=8 \\ -7x+y=4 \end{cases}$$

$$0+0=12$$

$$0=12$$

Never true
so no
solutions