

Ch. 4 Test p.307

- 1) False, one solution, no solutions, or infinite solutions.
- 2) False, must make both equations true.
- 3) True, $3 \neq 0$ which is false. So, there are \emptyset .
- 4) False, $3x=0 \Rightarrow$ divide by 3 to get $x=0$. Sub that in to get what $y =$.

$$5. \begin{array}{r} 2(1) - 3(-1) = 5 \\ 2 + 3 = 5 \checkmark \end{array}$$

$$6. \begin{array}{r} 4(3) - 3(-4) = 24 \\ 12 + 12 = 24 \checkmark \end{array}$$

$$6(1) + (-1) = 1 \\ 6 - 1 \neq 1 \text{ X}$$

$$4(3) + 5(-4) = -8 \\ 12 - 20 = -8 \checkmark$$

NO

Yes

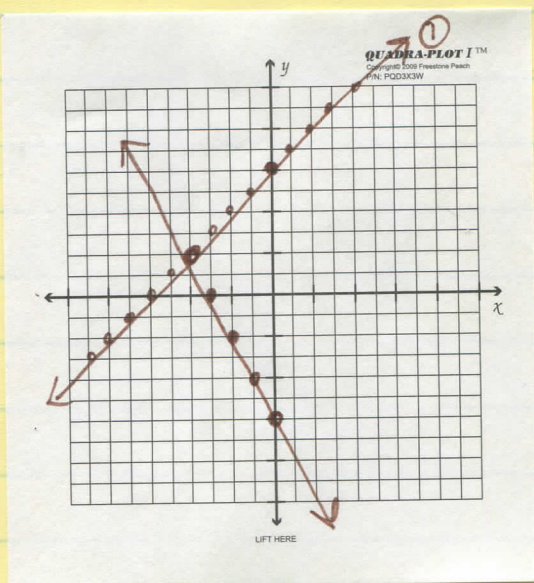
7.

$$\begin{cases} y - x = 6 \\ y + 2x = -6 \end{cases}$$

$$\textcircled{1} y = x + 6$$

$$\textcircled{2} y = -2x - 6$$

(-4, 2)



$$8. \begin{cases} 3x - 2y = -14 \\ x + 3y = -1 \end{cases} \quad x = (-3y - 1)$$

$$3(-3y - 1) - 2y = -14$$

$$\begin{array}{r} -9y - 3 - 2y = -14 \\ -11y - 3 = -14 \\ \quad \quad \quad +3 \quad +3 \\ \hline -11y = -11 \end{array}$$

$$\frac{-11y}{-11} = \frac{-11}{-11}$$

y = 1

$$\begin{array}{r} x + 3(1) = -1 \\ x + 3 = -1 \\ \quad \quad \quad -3 \quad -3 \\ \hline x = -4 \end{array}$$

(-4, 1)

$$9. \begin{cases} \frac{1}{2}x + 2y = -\frac{15}{4} \\ 4x = -y \quad y = -4x \end{cases}$$

$$4 \left[\frac{1}{2}x + 2(-4x) = -\frac{15}{4} \right]$$

$$2x + 8(-4x) = -15$$

$$2x - 32x = -15$$

$$-30x = -15$$

$x = \frac{1}{2}$

$$-y = 4\left(\frac{1}{2}\right)$$

$$-y = 2$$

y = -2

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

$$10. \begin{cases} 3x + 5y = 2 & (3) \\ 2x - 3y = 14 & (5) \end{cases}$$

$$9x + 15y = 6$$

$$\underline{10x - 15y = 70}$$

$$19x = 76$$

$$\boxed{x = 4}$$

$$2(4) - 3y = 14$$

$$8 - 3y = 14$$

$$-3y = 6$$

$$\boxed{y = -2}$$

$$\boxed{(4, -2)}$$

$$11. \begin{cases} 4x - 6y = 7 \\ -2x + 3y = 0 & (2) \end{cases}$$

$$\underline{-4x + 6y = 0}$$

$$0 + 0 = 7$$

$0 \neq 7$ $\boxed{\emptyset}$ No solution

$$12. \begin{cases} 3x + y = 7 & y = (-3x + 7) \\ 4x + 3y = 1 & \text{substitution} \end{cases}$$

$$4x + 3(-3x + 7) = 1$$

$$4x - 9x + 21 = 1$$

$$\underline{-5x + 21 = 1}$$

$$-5x = -20$$

$$\boxed{x = 4}$$

$$3(4) + y = 7$$

$$12 + y = 7$$

$$\boxed{y = -5}$$

$$\boxed{(4, -5)}$$

$$13. \begin{cases} 3(2x + y) = 4x + 20 \\ x - 2y = 3 & x = (2y + 3) \end{cases}$$

substitution

$$3(2(2y + 3) + y) = 4(2y + 3) + 20$$

$$3(4y + 6 + y) = 8y + 12 + 20$$

$$\underline{12y + 18 + 3y = 8y + 32}$$

$$15y + 18 = 8y + 32$$

$$\begin{array}{r} -8y \\ 7y + 18 = 32 \\ \hline -18 \quad -18 \\ \hline 7y = 14 \end{array}$$

$$7y = 14$$

$$\boxed{y = 2}$$

$$x - 2(2) = 3$$

$$x - 4 = 3$$

$$\underline{+4 \quad +4}$$

$$\boxed{x = 7}$$

$$\boxed{(7, 2)}$$

cross multiply

$$14. \begin{cases} \frac{x-3}{2} = \frac{2-y}{4} \\ \frac{7-2x}{3} = \frac{y}{2} \end{cases}$$

$$\begin{cases} 4(x-3) = 2(2-y) \\ 3y = 2(7-2x) \end{cases}$$

$$\begin{cases} 4x-12 = 4-2y \\ 3y = 14-4x \end{cases}$$

$$\begin{cases} 4x-12 = 4-2y \\ 3y = 14-4x \end{cases}$$

$$\begin{cases} 4x-12 = 4-2y \\ 3y = 14-4x \end{cases} \quad 4x = (-3y + 14)$$

$$-3y + 14 - 12 = 4 - 2y$$

$$-3y + 2 = 4 - 2y$$

$$2 = 4 + y$$

$$\boxed{-2 = y}$$

$$\frac{x-3}{2} = \frac{2-(-2)}{4}$$

$$\frac{x-3}{2} = \frac{4}{4}$$

$$\frac{x-3}{2} = 1$$

$$\boxed{(5, -2)}$$

$$\begin{cases} x-3=2 \\ \boxed{x=5} \end{cases}$$

Texas has 252,500 farms, and Missouri has 112,500 farms.

$$15. \begin{cases} x = 1^{\text{st}} \# \\ y = 2^{\text{nd}} \# \end{cases}$$

$$\begin{cases} x+y=124 & \text{elimination} \\ x-y=32 & 78+y=124 \end{cases}$$

$$2x = 156 \quad \boxed{y=46}$$

$$\boxed{x=78}$$

$$(78, 46)$$

1st # is 78 and the second # is 46.

16. OMIT

$$17. \begin{cases} x = \# \text{ of farms in Texas} \\ y = \# \text{ of farms in MO} \end{cases}$$

$$\begin{cases} (140,000 + y) = x \\ x + y = 365,000 \end{cases}$$

$$\begin{cases} (140,000 + y) = x \\ x + y = 365,000 \end{cases}$$

$$140,000 + y + y = 365,000$$

$$140,000 + 2y = 365,000$$

$$2y = 225,000$$

$$\boxed{y=112,500}$$

$$x + 112,500 = 365,000$$

$$\boxed{x=252,500}$$