

Solve the following system by graphing AND substitution

$$y = 3x + 9$$

$$y = x - 3$$

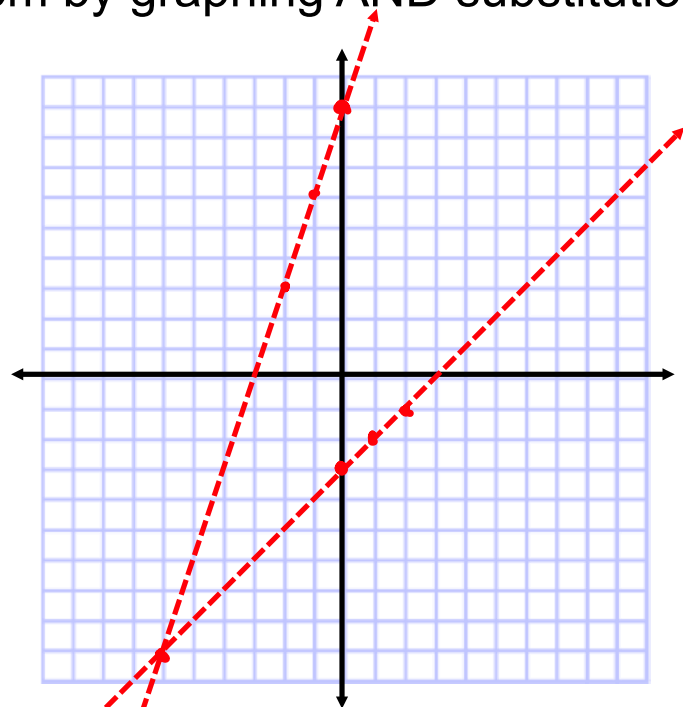
$$x - 3 = 3x + 9$$

$$+3 \quad +3$$

$$x = 3x + 12$$

$$-3x \quad -3x \quad x = -6$$

$$\frac{-2x = 12}{-2} \quad \frac{-2x = 12}{-2}$$



$$y = -6 - 3$$

$$y = -9$$

$$(-6, -9)$$



11. $(2, 6)$

13. $\left(-\frac{5}{7}, 2\frac{2}{7}\right)$

15. $(3, 0)$

17. $(-11, -19)$

19. $(-12, -5)$

12. $(8, 11)$

14. $(13, -5)$

16. $\left(7\frac{3}{4}, -\frac{1}{8}\right)$

18. $(4, 6)$

Systems Word Problems

Find the value of two numbers if their sum is 12 and their difference is 4.

$$\begin{array}{l} x \\ y \end{array}$$

System: $x + y = 12$
 $x - y = 4$

Answer: $(8, 4)$ $x = 8$
 $y = 4$

$$y + 4 + y = 12$$

$$2y + 4 = 12$$

$$2y = 8$$

$$y = 4$$

x true/false
y multiple choice

$$3x + 11y = 100$$

$$x + y = 20$$

5 multiple choice and 15 T/F

$$y = -x + 20$$

$$3x + 11(-x + 20) = 100$$

$$3x - 11x + 220 = 100$$

$$-8x + 220 = 100$$

$$\frac{-8x}{-8} = \frac{-120}{-8}$$

$$x = 15$$

$$x + y = 20$$

$$15 + y = 20$$

$$y = 5$$

A bicycle shop sells bicycles and tricycles. There are forty five total bicycles and tricycles at the store. The total number of wheels on all of them is 105. How many bicycles are there?

x Number of bicycles

y Number of tricycles

$$x + y = 45$$

$$2x + 3y = 105$$

30 bicycles, 15 tricycles

$$x + y = 45$$

$$2x + 3y = 105$$

$$y = -x + 45$$

$$2x + 3(-x + 45) = 105$$

$$2x - 3x + 135 = 105$$

$$-x + 135 = 105$$

$$-x = -30$$

$$x = 30$$

$$x + y = 45$$

$$30 + y = 45$$

$$y = 15$$

30 bikes

15 trikes

