

Use a graphing calculator to find the solution(s) for the following systems of equations. Round answers to the hundredths place.

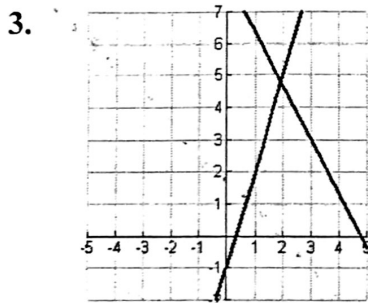
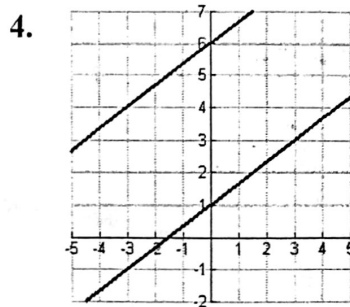
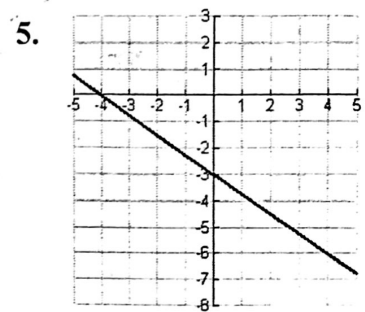
1. $y = 8x - 6$

$y = \left(\frac{3}{4}\right)^x$ $(.848, .784)$

2. $y = \frac{2}{5}x + 2$ $(-3.97, .41)$

and
 $y = \left(\frac{5}{4}\right)^x$ $(7.05, 4.82)$

The graph of the system of two linear equations is shown. Tell whether the linear system has *infinitely many solutions*, *one solution*, or *no solution*.

one solutionNO SOLUTION ∞ many

Check whether the ordered pair is a solution of the system.

6. $(-3, -4)$

$4x - 7y = 16$

$-6x + y = 14$

yes

Solve the system using any algebraic method.

7. $x + y = 2$

$y = 2x + 5$

$(-1, 3)$

8. $2x - y = -8$

$2x + y = 4$

$(-1, 6)$

9. $10x - 16y = 17$

$x + y = 3$

$(2.5, .5)$

10. $-5x - 6y = 3$

$3x - 8y = -7$

$\left(-\frac{33}{29}, \frac{13}{29}\right)$

Solve the system using any algebraic method.

11. $-2x + 2y = -5$
 $x + y = -5$

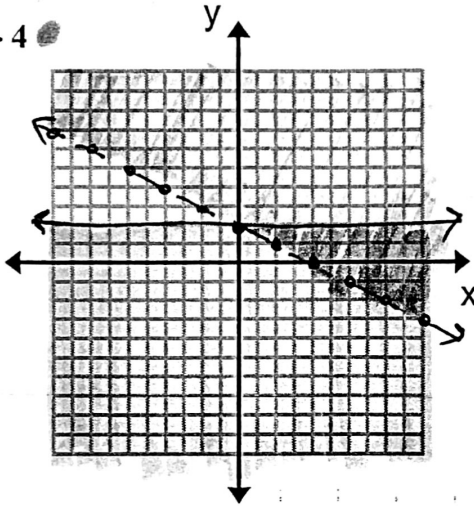
$\left(\frac{-5}{4}, \frac{-15}{4}\right)$

12. $3x - 8y = 11$
 $-6x + 16y = -5$

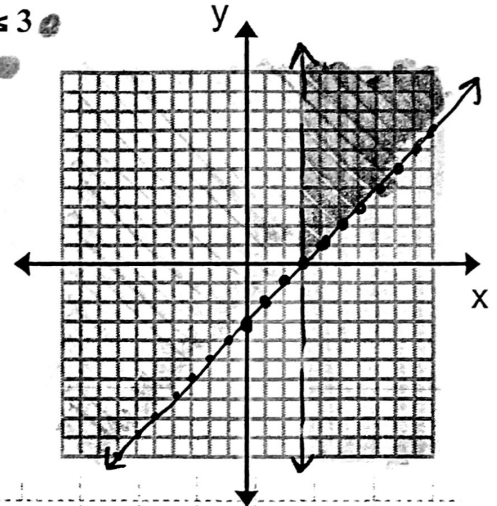
NO SOLUTION

Graph the system of linear inequalities.

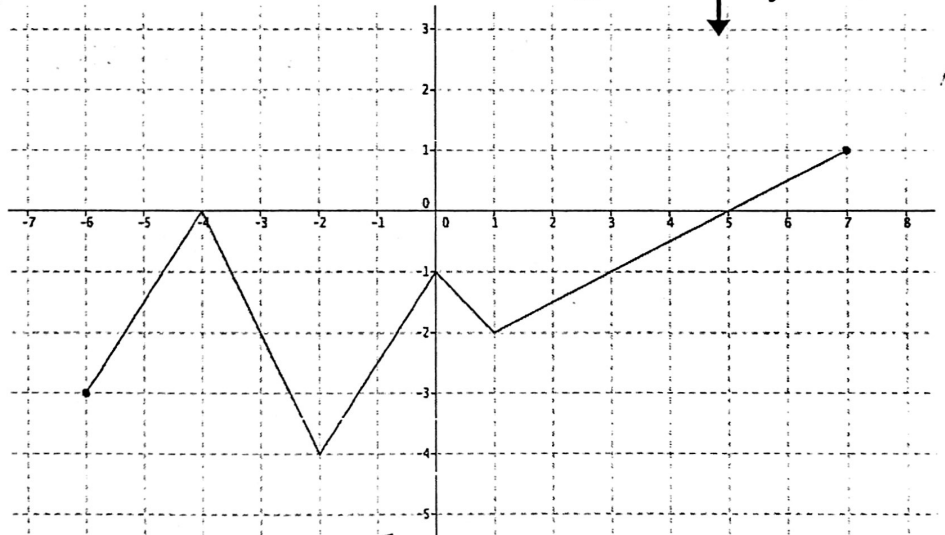
13. $x + 2y > 4$
 $y \leq 2$



14. $x - y \leq 3$
 $x > 3$



15. Describe the features of the function using INTERVAL NOTATION.



Domain: $[-6, 7]$

Range: $[-4, 1]$

Increasing: $(-6, -4)$ $(-2, 0)$ $(1, 7)$

Decreasing: $(-4, -2)$ $(0, 1)$

Positive: $(5, 7]$

Negative: $[-6, -4)$ $(-4, 5)$

x-intercept(s): $f(-4) = 0$ and $f(5) = 0$ y-intercept(s): $f(0) = -1$

Maximum: $f(7) = 1$

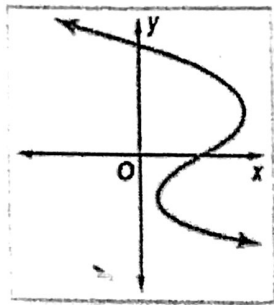
Minimum: $f(-2) = -4$

Is this a function? yes

Continuity: continuous

Are the following functions? Explain why or why not.

16.



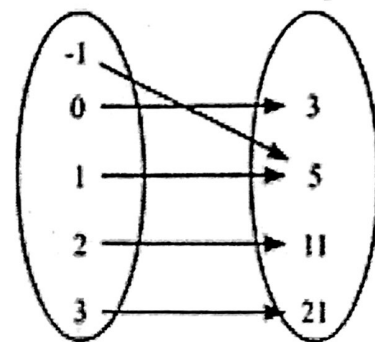
No, fails the vertical line test

17. $\{(-4,3), (5,3), (-2,1), (-7,1)\}$

Yes,
each x value
has exactly
1 y value.

18. Domain

Range



Yes, each # in the Domain goes to 1 # in the Range.

Use $f(x) = 3x - 4$, $g(x) = x^2 + 5$, $h(x) = 6^x$, and $j(x) = 2 + 3^x$ to answer the following questions.

19. $f(-5) = -19$

20. $g(-5x) = 25x^2 + 5$

21. $h(-3) = \frac{1}{216}$

22. $h(2) + 15 = 51$

23. $f(7) - g(3) = 3$

24. $h(-2) \cdot f(-4) = -\frac{4}{9}$

25. $j(5) = 245$

26. a. You are in charge of buying the hamburger and chicken for a party. You have \$60 to spend. The hamburger costs \$2 per pound and chicken is \$3 per pound. Write an equation that represents the different amounts of hamburger, x , and chicken, y , that you can buy.

$$2x + 3y = 60$$

b. If you buy 15 pounds of hamburger, how many pounds of chicken can you buy?

10 pounds

27. a. You are buying \$48 worth of lawn seed that consists of two types of seed. One type is a quick-growing rye grass that costs \$4 per pound, and the other type is a higher-quality seed that costs \$6 per pound. Write an equation that represents the different amounts of \$4 seed, x , and \$6 seed, y , that you can buy.

$$4x + 6y = 48$$

- b. If you buy 3 pounds of quick-growing rye grass, how many pounds of the higher-quality seed can you buy?

6 pounds

28. Cami purchased a rare coin from a dealer for \$300. The value of the coin increases 5% each year.

- a) Write an explicit equation

$$y = 300(1.05)^x$$

- b) How much will the coin be worth in 5 years? (Round to the nearest hundredth.)

\$382.88

29. In the years from 2010 to 2015, the population of the District of Columbia is expected to decrease about 0.9% annually. In 2010, the population was about 530,000.

- a) Write an explicit equation.

$$y = 530,000(.991)^x$$

- b) What is the population expected to be in 2015?

(Round to the nearest whole number.)

506,575 people

Solve the following equations for y . Put the answers in slope-intercept form.

30. $-3x + 6y = 24$ for y

$$y = \frac{1}{2}x + 4$$

31. $2x - 5y = 15$ for y

$$y = \frac{2}{5}x - 3$$

32. $-4x - 6y = 10$ for y

$$y = -\frac{2}{3}x - \frac{5}{3}$$

33. $9x + 12y = -12$ for y

$$y = -\frac{3}{4}x - 1$$

34. Your extended family is having a reunion, and your family is in charge of getting the food for the dinner. You have \$900.00 to spend on lasagnas and sides (salads, bread sticks, desserts, etc.). Store A offers you lasagnas for \$12.00 each and \$9.00 for each side dish. Store B offers you lasagnas for \$18.00 each and \$6.00 for each side dish.

The equations are provided. Use a graphing calculator to graph the equations and then answer the questions that follow.

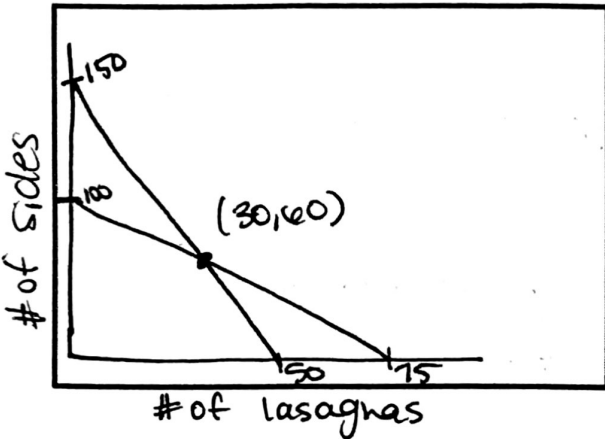
Equations:

Store A: $12x + 9y = 900$

Store B: $18x + 6y = 900$

Table: (go from y- intercept to x-intercept and use only whole number ordered pairs)

Graph: Label axes, lines, intercepts and intersection point.



One Other Whole # Point →
 Intersection Pt
 One Other Whole # Point →

Equation 1 Ordered Pairs	Equation 2 Ordered Pairs
(0, 100)	(0, 150)
(,)	(,)
(30, 60)	(30, 60)
(,)	(,)
(75, 0)	(50, 0)

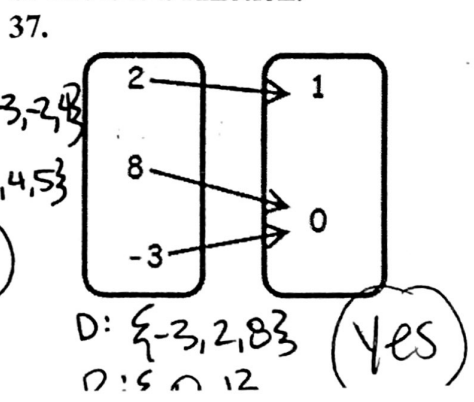
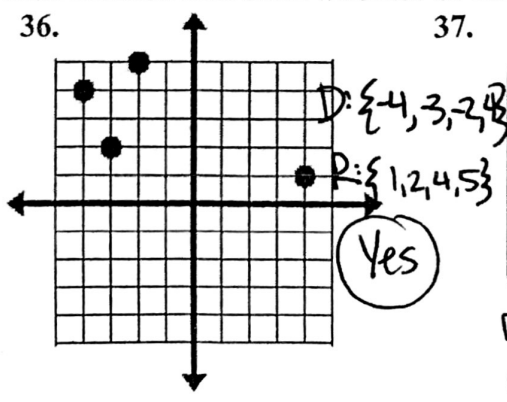
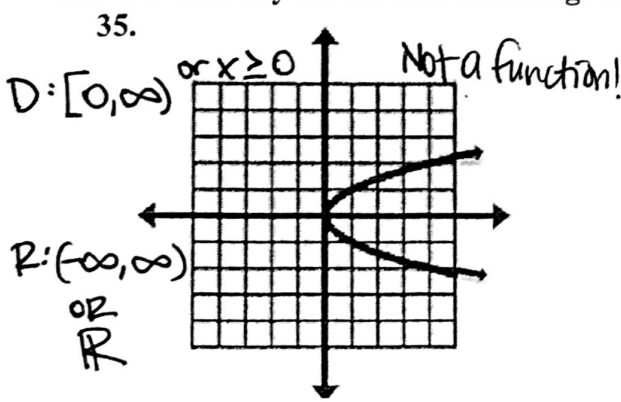
a) What is coordinate of intersection? (30, 60)

b) What does the intersection point mean in context of the story?
 You can get 30 lasagnas & 60 side dishes at either store & spend all \$900.00.

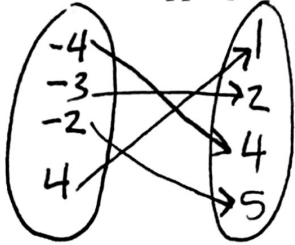
c) If you decide your family needs to buy 40 lasagnas, which store should you go with so you can get the most number of side dishes within your budget?
 Store A

d) If you decide your family needs to buy 80 different side dishes, which store should you go with so you can get the most number of lasagnas within your budget?
 Store B

#35-37: Identify the domain and range of each relation and state whether or not it is a function.



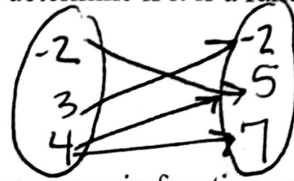
38. Create a mapping for #36.



39. Create a mapping for

$$\{(4,5), (3,-2), (-2,5), (4,7)\}$$

and determine if it is a function.



Not a function

40. Evaluate $f(x) = x^2 + 3$ given the domain $\{-2, 0, 1, 2\}$. Write answers in function notation.

$$f(-2) = 7$$

$$f(0) = 3$$

$$f(1) = 4$$

$$f(2) = 7$$

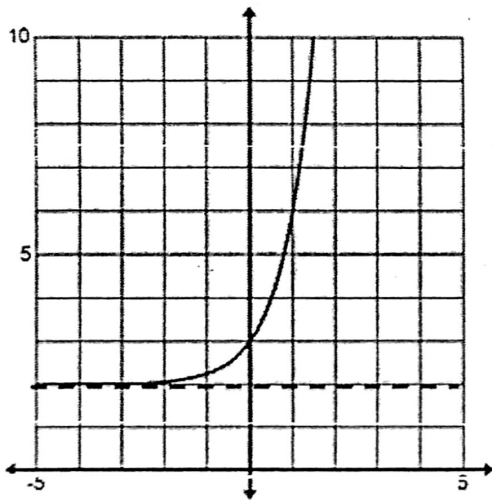
41. If $f(x) = 4^x + 10$, what is $f(2)$?

$$f(2) = 26$$

42. If $g(x) = 5x^3 + 2$, what is $g(1.5)$?

$$g(1.5) = 18.875$$

43. Is the graph below a function? Yes Why or why not? passes the vertical line test



Domain: $(-\infty, \infty)$ or \mathbb{R}

Range: $(2, \infty)$ or \mathbb{R}

Increasing or Decreasing

Positive or Negative

x-intercept: None

y-intercept: $f(0) = 3$

Continuous or Discrete

What is the equation of the curve shown? $y = 3^x + 2$

Write an equation of the line.

44. parallel to $y = -2x + 13$ with a y-intercept of 8.

$$y = -2x + 8$$

45. perpendicular to $y = \frac{1}{5}x + 6$ with a y-intercept of -9

$$y = -5x - 9$$

46. Line j is parallel to the line with the given equation and line j passes through P .
Write the equation of line j . $y = -5x + 27$, $P(-4, 2)$

$$y = -5x - 18$$

47. Line k is perpendicular to the line with the given equation and line k passes through P .
Write the equation of line k . $y = -7x + 11$, $P(3, 0)$

$$y = \frac{1}{7}x - \frac{3}{7}$$

48. Write the equation of the line that passes through $(4, -1)$ and is parallel to the line $x = -6$.

$$x = 4$$

49. Write an equation of the line that passes through $(4, 6)$ and is perpendicular to the line that passes through $(6, -6)$ and $(10, -4)$

$$y = -2x + 14$$

Match each equation with the correct graph.

50. $y = (0.25)^x$

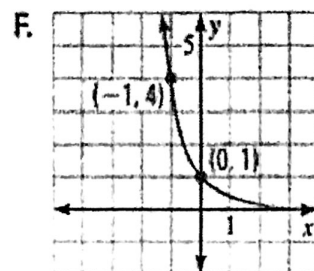
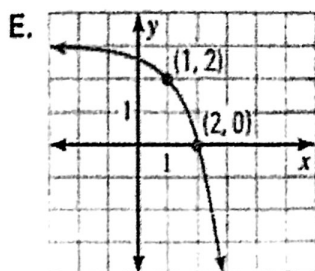
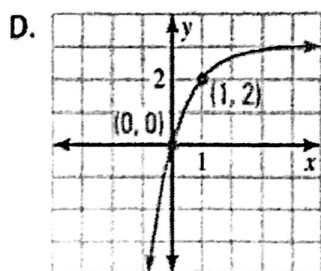
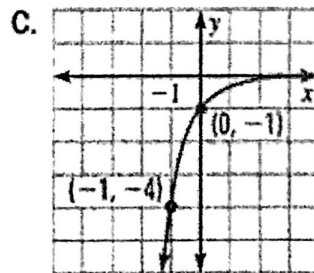
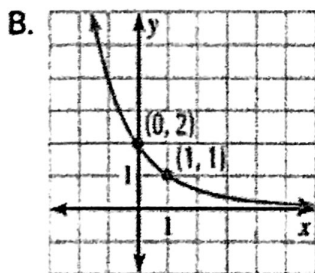
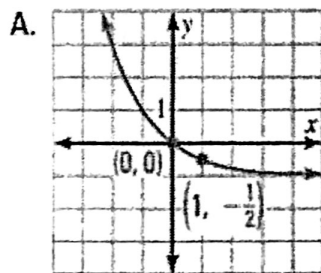
F

51. $y = -(0.25)^x$

C

52. $y = (0.5)^x - 1$

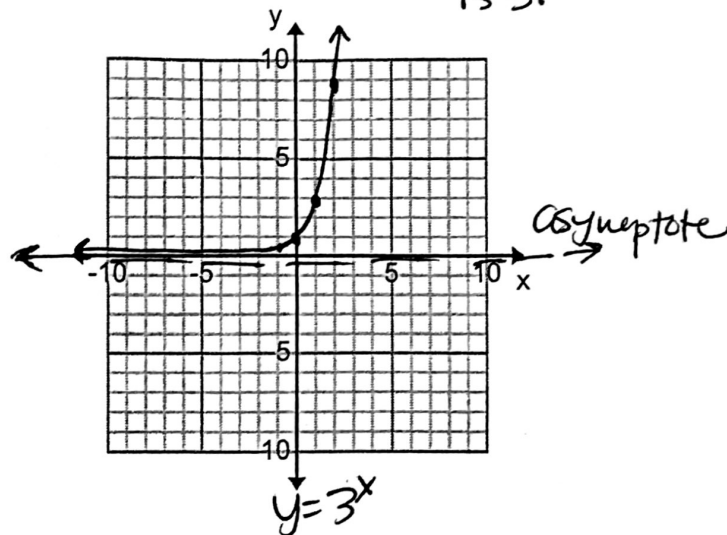
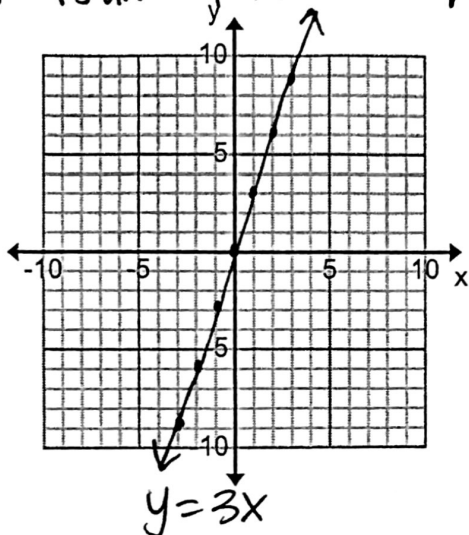
A



53. Explain the differences between the graphs of $y = 3x$ and $y = 3^x$, then graph both equations below.
(Label each graph with the equation graphed)

$y = 3x \rightarrow$ is a linear equation, so it's a straight line
 \rightarrow y intercept is $(0,0)$ & slope is $\frac{3}{1}$

$y = 3^x$ is an exponential equation (curve) y int is $(0,1)$ & common ratio is 3.



54. Write the equations of the two lines that the shape could be reflected over and have the image map directly onto itself.

Equation 1: $x = 4$

Equation 2: x axis or $y = 0$

