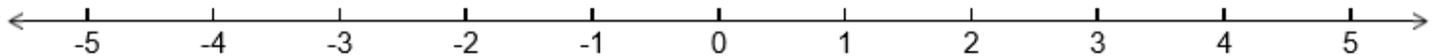


1. A baseball team scored 5 more runs in its second game than in its first. The team scored twice as many runs as the first game in the third game. The total number of runs scored in all three games was 29 runs. How many runs did the team score in the second game?

2. Solve and graph the solutions to the inequality  $-4|8x + 2| \geq -24$ .



3. Given the following equation,  $3x - 2(x + 3) = 5 - 2x$ , complete the table by providing a property/explanation for each step.

Equations	Properties/Explanations
$3x - 2(x + 3) = 5 - 2x$	
$3x - 2x - 6 = 5 - 2x$	
$x - 6 = 5 - 2x$	
$x + 2x - 6 = 5 - 2x + 2x$	
$3x - 6 = 5$	
$3x - 6 + 6 = 5 + 6$	
$3x = 11$	
$\frac{3x}{3} = \frac{11}{3}$	
$x = 3\frac{2}{3}$	

4. Lauren and Kristen run a total of 104 miles per week. Lauren runs 14 fewer miles than Kristen. How many miles does Lauren run each week?

5. Which equation has no solution?

A.  $4(x + 2) = 4(x - 3)$     B.  $-2(x + 1) = 3x - 2 - 5x$     C.  $4(x + 1) - 7x = -3(x - 1) + 1$

6. Solve the inequality,  $12(x + 4) \leq 6(x - 3) + 4(x + 10)$  and state the solution.

7. The baseball team is ordering pizzas for the end-of-year rewards party. The price for 6 pizzas is \$57. The price for 15 pizzas is \$142.50. By how much does the cost increase for each additional pizza purchased?

8. What are the first five terms in the arithmetic sequence with the recursive formula below? What is the 15<sup>th</sup> term?

$$\begin{cases} a_1 = 5 \\ a_n = a_{n-1} + 4 \end{cases}$$

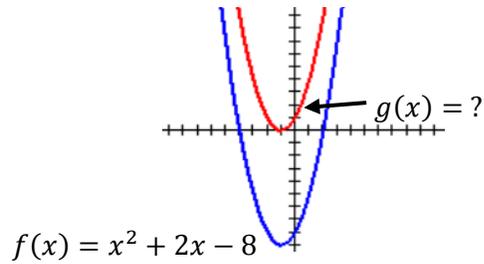
9. Find the domain for the following functions.

a)  $y = \sqrt{x^2 - 9}$

b)  $y = \sqrt{x - 9}$

c)  $y = \frac{1}{9-x^2}$

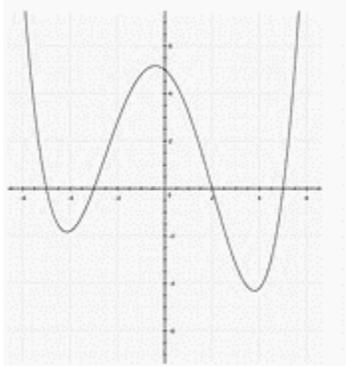
10. The graph of  $f(x) = x^2 + 2x - 8$  is shown with its transformation  $g(x)$ . What is the equation of  $g(x)$ ?



11. The function  $g(x)$  is a transformation of the function  $f(x)$ . If  $g(x) = 5(x - 3)^2$  and  $f(x) = 5(x + 1)^2$ , then what translation describes the change from  $f(x)$  to  $g(x)$ ?

12. Jonathon paid \$237 for 15 pizzas, which included the \$12 delivery charge. How much will he pay for 22 pizzas?

13. Analyze the key features of this graph. How many of each does this graph have?



How many?

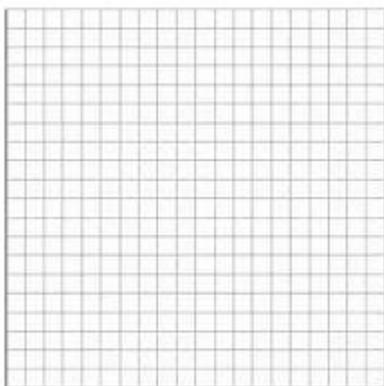
Relative minimum \_\_\_\_\_

Relative maximum \_\_\_\_\_

Absolute minimum \_\_\_\_\_

Absolute maximum \_\_\_\_\_

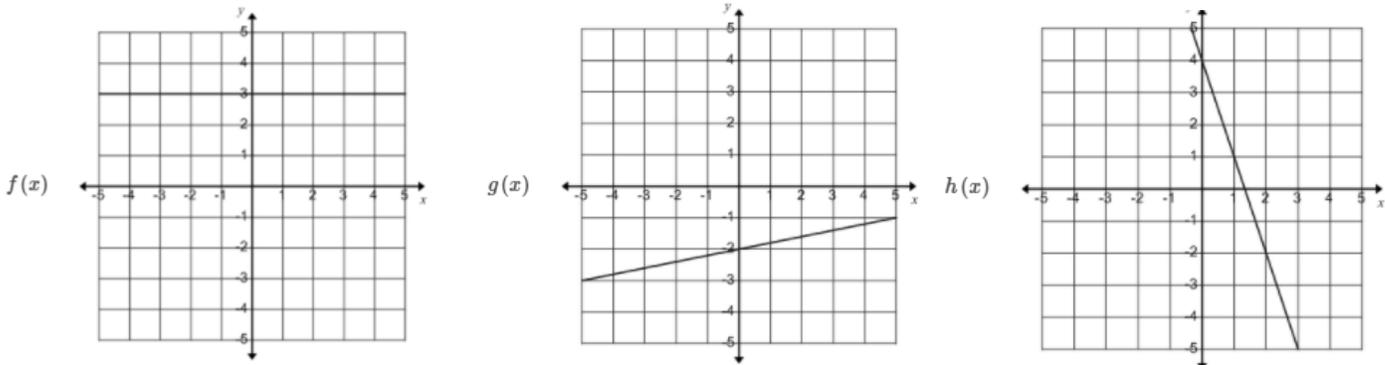
14. A laptop loses half its charge every 6 hours of use. Complete the table and graph that shows the laptop's charge after 24 hours.



Time (hours)	Charge (%)
0	100
6	
	25

15. Parker deposits \$55 per week in his savings account. If he has \$385 after 7 weeks, write an equation in point-slope form that can be used to represent his total savings  $y$  after  $x$  weeks.

16. These are the graphs of  $f(x)$ ,  $g(x)$ , and  $h(x)$ .



Order the functions from **least to greatest** according to slope value.

\_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

17. A teacher finds that for every additional 30 minutes of study time, a student's test score increases by 7 points. What is the slope of the data's trend line if time is the independent variable and the data are plotted in terms of points and hours?

18. The owner of a café kept records on the daily high temperature and the number of hot apple ciders sold on that day. Some of the owner's data are shown below.

<b>Daily High Temperature (°F)</b>	32	75	80	48	15
<b>Number of Hot Apple Ciders Sold</b>	51	22	12	40	70

Using the linear equation that models the data, predict the number of hot apple ciders the café would sell on a day when the high temperature is  $92^{\circ}F$ . Round values to the nearest whole number.

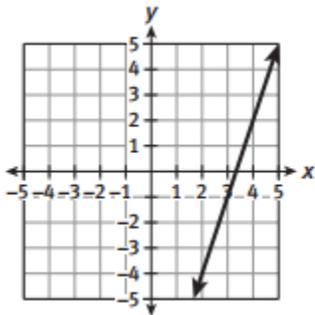
19. In an arithmetic sequence,  $a_3 = -8$  and  $a_6 = -2$ . What is  $a_1$ ?

20. In an arithmetic sequence, the fourth term is  $-3$  and the ninth term is  $-23$ . What is the explicit formula (completely simplified) for the sequence?

21. What is the standard form of  $y - 5 = -5(x + 2)$ ?

22. Line  $p$  is perpendicular to the line  $y = -\frac{1}{3}x + 2$  and pass through  $(-1, -4)$ . What is the equation of line  $p$  written in point-slope form? Then, write it in slope-intercept form and standard form.

23. Which is the equation of this line in point-slope form?



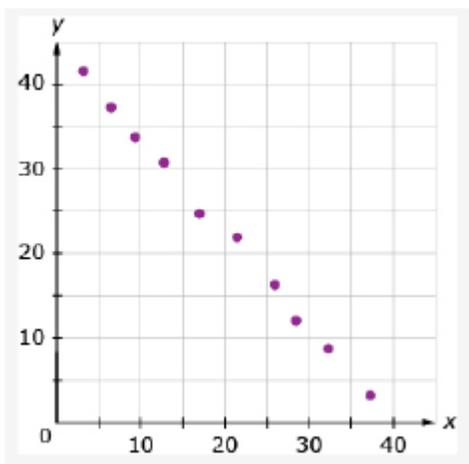
A.  $y + 5 = 3(x + 5)$

B.  $y - 5 = 3(x - 5)$

C.  $y = 3x - 10$

D.  $y = 3x + 10$

24. What is the **best** equation of the trend line for this scatterplot?



A.  $y = -2x + 45$

B.  $y = -10x + 45$

C.  $y = -13x + 40$

D.  $y = -13x + 30$

25. A sequence has the terms 10, 15 and 20. What is a possible general formula for the sequence?

A.  $f(x) = -4x + 23$

B.  $f(x) = -5x + 30$

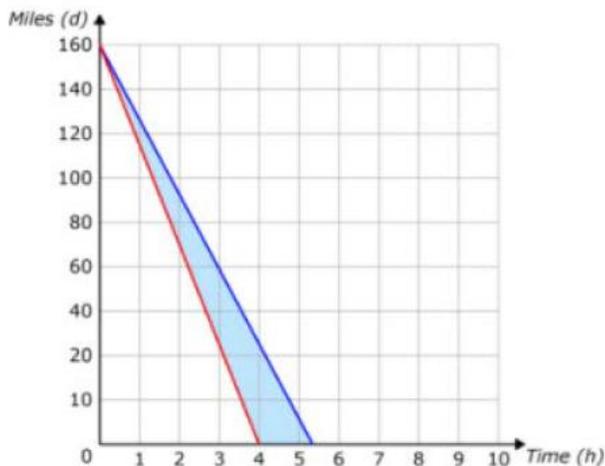
C.  $f(x) = 2x + 20$

D.  $f(x) = x + 12$

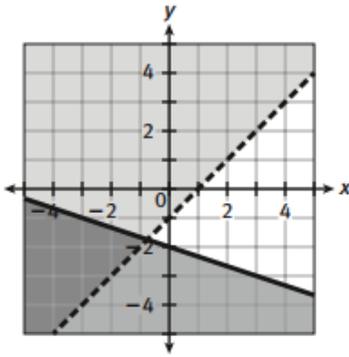
26. Mario is working on math problems. He has already completed 10 problems when he begins timing himself. He is completing problems at a rate of 2 problems per minute. Write an equation that expresses Mario's problems completed,  $p$ , as a function of time,  $m$ , in minutes after he has started timing himself.

27. Tom has invested a total of \$3,000 in two stocks, Apple and IBM. Apple stock went up by 1.3% and IBM went up by 4.2% in the year after the money was invested. The total value of Tom's investment went up by \$73.80 in this year. Let  $x$  represent the amount of money invested in Apple and  $y$  represent the amount of money invested in IBM. Write a system of equations to represent this situation.

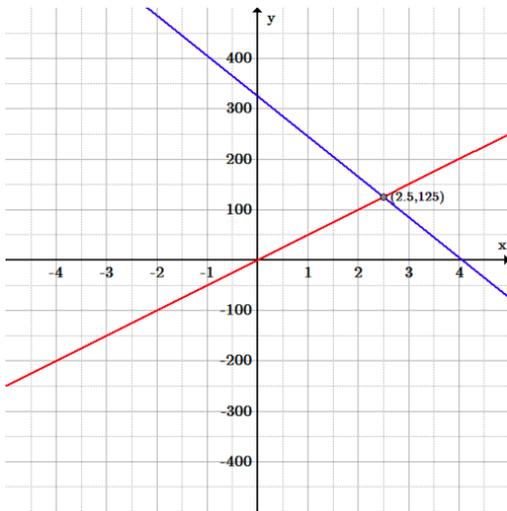
28. Mary is traveling 160 miles and will travel at an average speed between 31 and 40 mph. The graph shows the possible times, in hours, for completing the trip. If Mary leaves at 9:30am, between what times will she finish her journey?



29. Write a system of inequalities to represent the graph below.



30. Dominic and Mark are on opposite sides of ends of a football field. Dominic is in the away end zone moving to the home end zone. Mark is in the home end zone and moving to the away end zone. They will meet somewhere while crossing from one end to the other end. The distance,  $y$ , in feet, from the home end zone is a function of the seconds,  $x$ , since Mark left the home end zone.

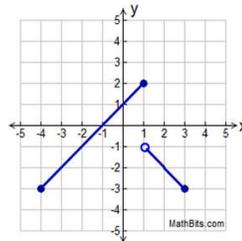


What does the intersection point of (2.5, 125) represent?

31. For the functions  $f(x)$  and  $g(x)$ ,

$$f(x) = \begin{cases} 3x - 5, & \text{when } x < 4 \\ -x - 3, & \text{when } x \geq 4 \end{cases}$$

$g(x)$



Do both functions have the same domain?

Do both functions have the same range?

Are both functions piecewise defined?

Do both functions have a decreasing rate of change?