**2025 Fall Semester Exam Review**

**1) Choose the linear equation that represents the table below.**

| Time (x) | 0 | 2 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Gallons (y) | 25 | 20 | 15 | 10 | 5 |

**a)** $y = -\frac{5}{2}x + 25$

**b)** $y = -\frac{2}{5}x + 25$

**c)** $y = 25x - 5$

**d)** $y = 5x - 7$

**2) The total cost in dollars to buy uniforms for the players on a baseball team can be found using the function c = 150u + 4.95, where u is the number of uniforms bought. If there are at least 12 players but no more than 20 players on the baseball team, what is the domain of the function for this situation?**

**a)** $12 \leq u \leq 20$

**b)** $1805 \leq c \leq 3005$

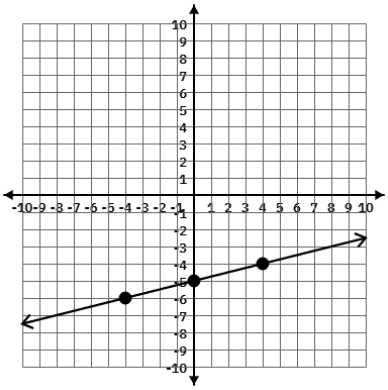
**c) {12, 13, 14, 15, 16, 17, 18, 19, 20}**

**d) {1805, 1955, 2105, 2255, 2405, 2555, 2705, 2855, 3005}**

**3) What is the solution to** $-(5k + 6) = 3(8 - k)$**?**

**k = _____**

**4) The graph of the equation $y = \frac{1}{4}x - 5$ is shown below.**



**What is the equation of the line that is perpendicular and passes through the point (3, -3)?**

**a) $y = \frac{1}{4}x + 3$**

**b) $y = -\frac{1}{4}x - 7$**

**c) y = 4x + 2**

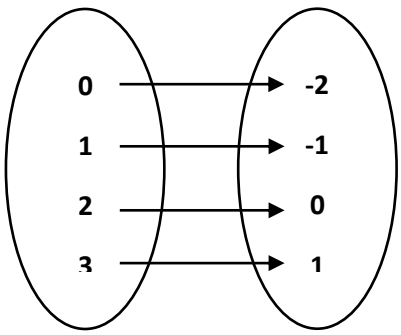
**d) y = -4x + 9**

**5) The function f(x) = {(0, -2), (1, -1), (2, 0), (3, 1)} can be represented in several other ways. Which is NOT a correct representation of the function f(x)?**

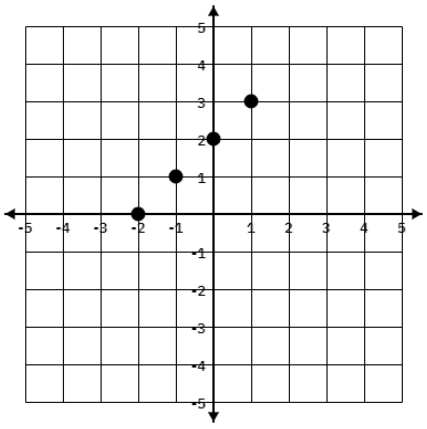
**a) x: {0, 1, 2, 3}**
**y: {-2, -1, 0, 1}**

**b) y = x – 2 and the domain is {0, 1, 2, 3}**

**c)**




**d)**



**6) What is the domain of the following set of ordered pairs?**

**{(8, 2), (5, 4), (-2, -7), (-9, -9)}**

**a) {-9, -7, -2}**

**b) {-9, -7, 2, 4}**

**c) {-9, -2, 5, 8}**

**d) {2, 4, 5, 8}**

**7) What is the equation of the line parallel to the line y = $\frac{3}{4}$ x + 7 and passing through the point (-8, 4) ?**

**a) y = $\frac{3}{4}$ x – 1**

**b) y = $\frac{3}{4}$ x + 10**

**c) y = $-\frac{4}{3}$ x + 7**

**d) y = $-\frac{4}{3}$ x – 4**

**8) A function is shown.**

**f(x) = $\frac{1}{2}$ x + 5**

**What is the value of f(-6)?**

**a) f(-6) = 8**

**b) f(-6) = 2**

**c) f(-6) = 0**

**d) f(-6) = -3**

**9) Kwik Kar Auto Repair charges $96.00 for a car part plus $72.00 per hour that the mechanic works to install the part. Write an equation that you can use to determine the total cost, *c*, for installing the part for *h* hours.**

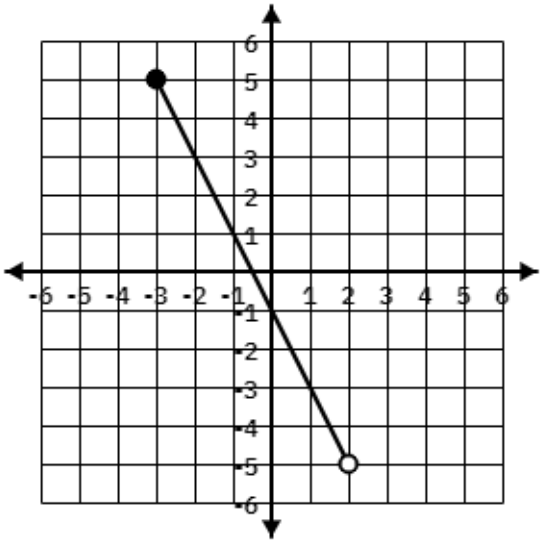
**a) h = 72c + 96**

**b) c = 72h + 96**

**c) h = 96c + 72**

**d) c = 96h + 72**

**10) Identify the range represented by the function graphed below.**




**a) $-3 \leq x < 2$**

**b) $-3 < x \leq 2$**

**c) $-5 \leq f(x) < 5$**

**d) $-5 < f(x) \leq 5$**

**11) The graph of a line is represented by the equation $4x - 5y = 12$. Which value represents the rate of change of y with respect to x for the equation ?**

**a)** $-\frac{4}{5}$

**b)** $-\frac{5}{4}$

**c)** $\frac{5}{4}$

**d)** $\frac{4}{5}$

**12) What is the slope of the line that contains the points (-5, 2) and (5, -3)?**

**a)** $\frac{1}{2}$

**b) 2**

**c)** $-\frac{1}{2}$

**d) -2**

**13) Which equation describes the line with an undefined slope and containing the point (-9, 8)?**

**a) y = 8**

**b) x = 8**

**c) y = -9x + 8**

**d) x = -9**

**14) The first five terms of a sequence $a_1 = -3$, $a_2 = 3$, $a_3 = 9$, $a_4 = 15$, and $a_5 = 21$. Based on this information, create an equation that can be used to find the nth term of the sequence, $a_n$.**

**Each answer may be used more than once. Not all answers will be used.**

| | | | | | |
|---|---|---|---|---|---|
| -9 | -6 | -3 | 3 | 6 | 9 |

$a_n$ = _____n + _____

**15) What is the range of the function f(x) = $\frac{1}{3}x - 2$ when the domain is {-3, 0, 9} ?**

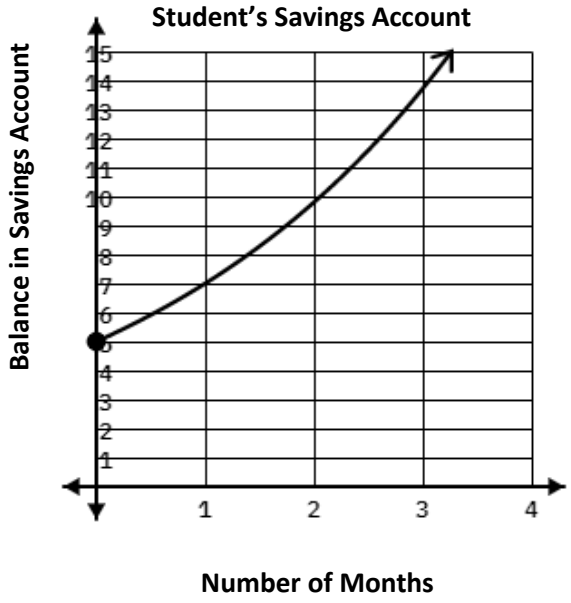
**a) {-11, -2, 25}**

**b) {-5, -2, -1}**

**c) {1, 2, 3}**

**d) {-3, -2, 1}**

**16) The savings account balance for a student can be modeled by the exponential function graphed on the grid, where x is the number months.**




**Based on the graph, which statement does not appear to be true?**

**a) The student had made $2 in 1 month.**

**b) Every month, the amount of money the student made increased by 40%.**

**c) Every month, the student made $2 every month.**

**d) The student started with $5 in their savings account.**

**17) The table below shows ordered pairs for a linear function.**

| x | 0 | 2 | 3 | 5 |
|---|---|---|---|---|
| y | -4 | 8 | 14 | 26 |

**Which equation represents these ordered pairs?**

**a) y = -4x**

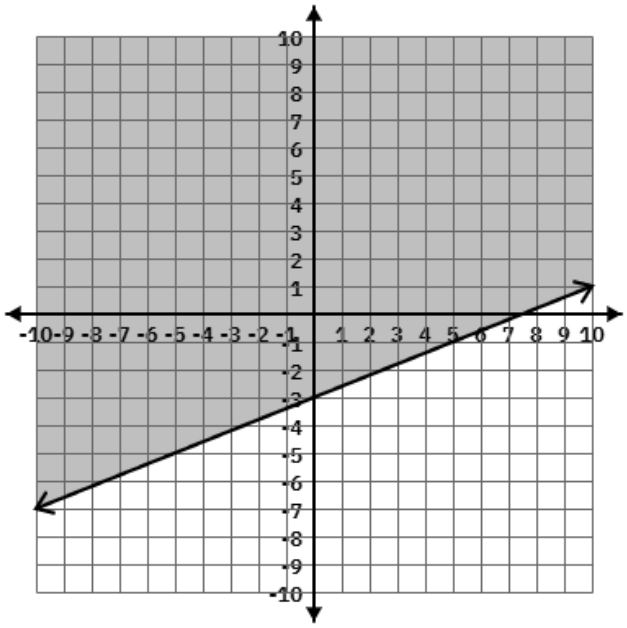
**b) y = x + 4**

**c) y = 6x – 4**

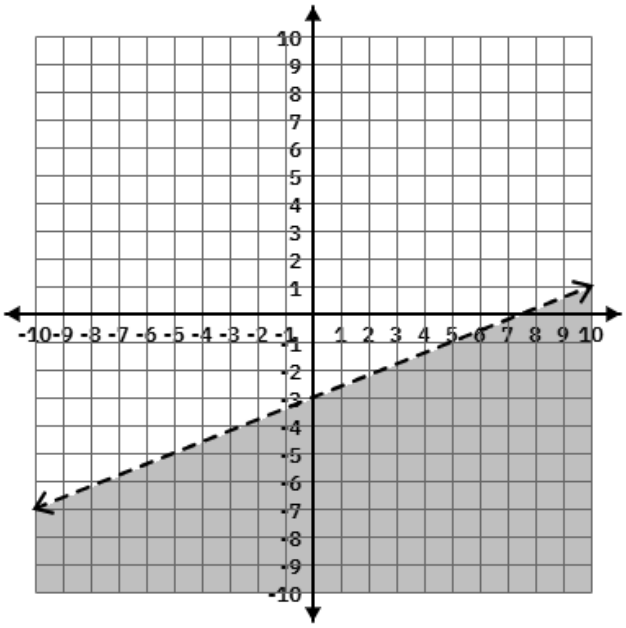
**d) y = -8x + 2**

**18) Which graph best represents the solution set of $y \leq \frac{2}{5}x - 3$?**

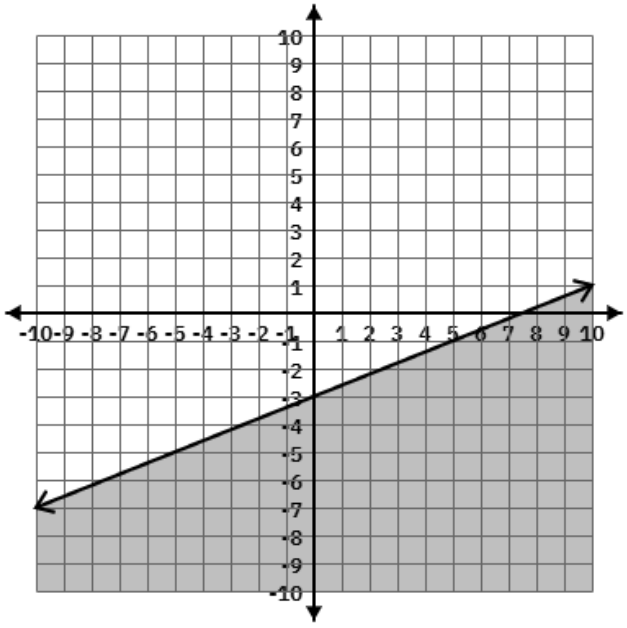
**a)**



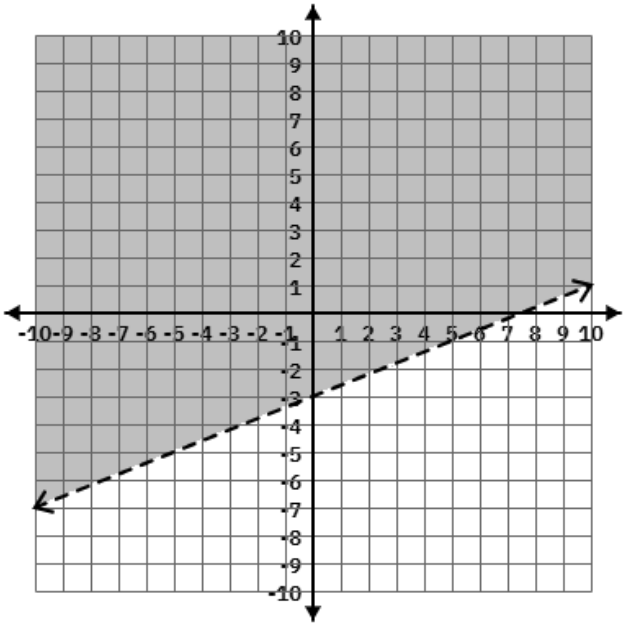
**b)**



**c)**

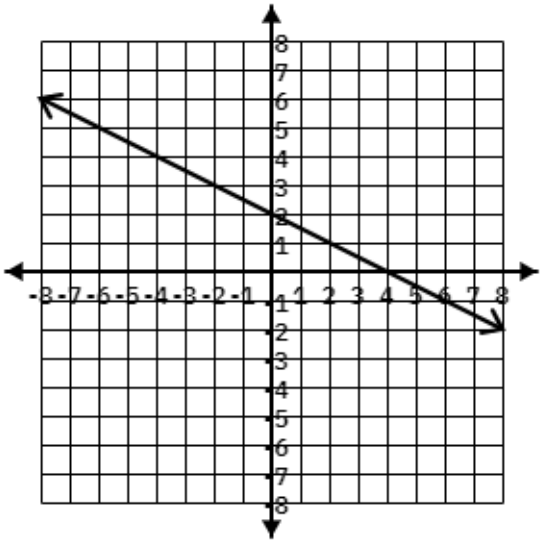


**d)**

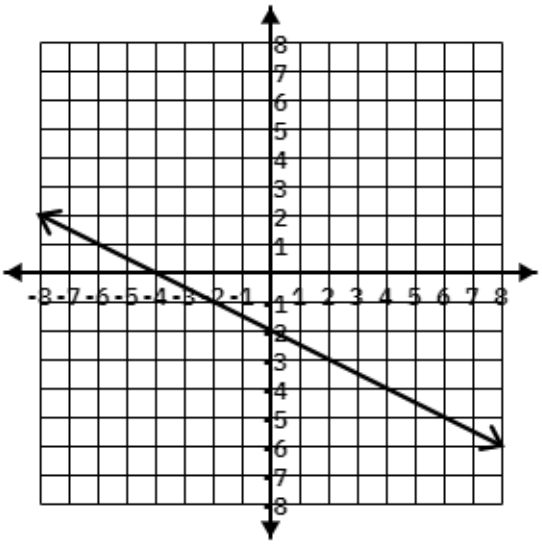


**19) Which line appears to have an x – intercept of 4 and a y – intercept of -2?**

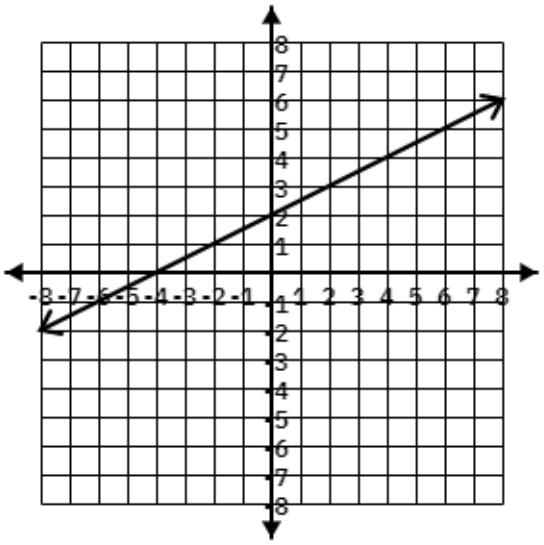
**a)**



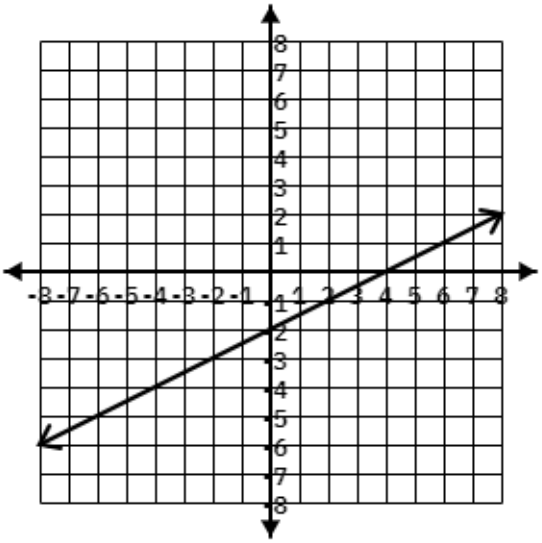
**b)**



**c)**



**d)**



**20) Given the equation 2x – 4y = 16, determine the slope-intercept form.**

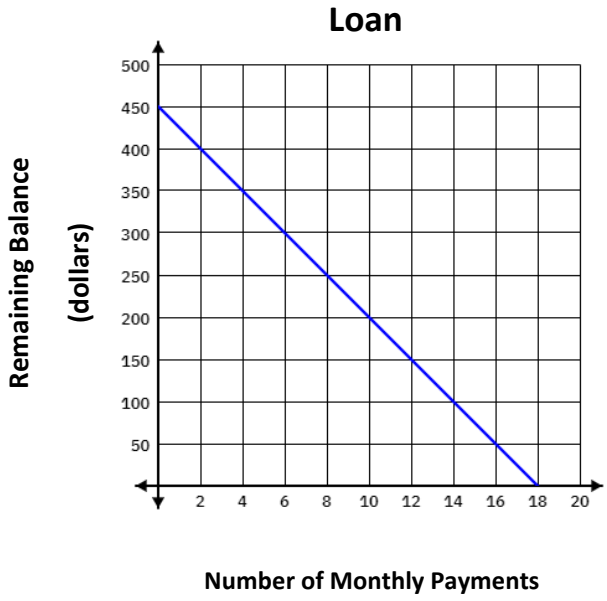
**a)** $y = -\frac{1}{2}x - 4$

**b)** $y = \frac{1}{2}x - 4$

**c)** $y = 2x + 4$

**d)** $y = \frac{1}{2}x + 16$

**21) The graph models the linear relationship between the number of monthly payments made on a loan and the remaining balance in dollars left to pay on the loan.**




**Which statement best describes the y-intercept of the graph?**

**a) The loan took 18 months to pay off.**

**b) The balance of the loan decreased by $25 per month.**

**c) After 10 months, the remaining balance of the loan was $200.**

**d) The starting amount of the loan was $450.**

**22) Solve the formula a(m – r) + n = s for a.**

**a)** $a = s(m - r) + n$

**b)** $a = \frac{s-n}{m-r}$

**c)** $a = s - (m - r) - n$

**d)** $a = \frac{s+n}{m-r}$

**23) A phone battery drains at a rate of 15% per hour when streaming video. If the battery starts at 100% charge. Write a function that models the amount of battery left in h hours.**

**f(h) = _____**

**24) The sides of a triangle are x, 3x – 1, and x + 5. If the perimeter of the triangle is (52 – x) cm, what is the length of the longest side?**

**25) Which equation in standard form has a graph that passes through the point (-3,1) and has a slope of $\frac{5}{3}$?**

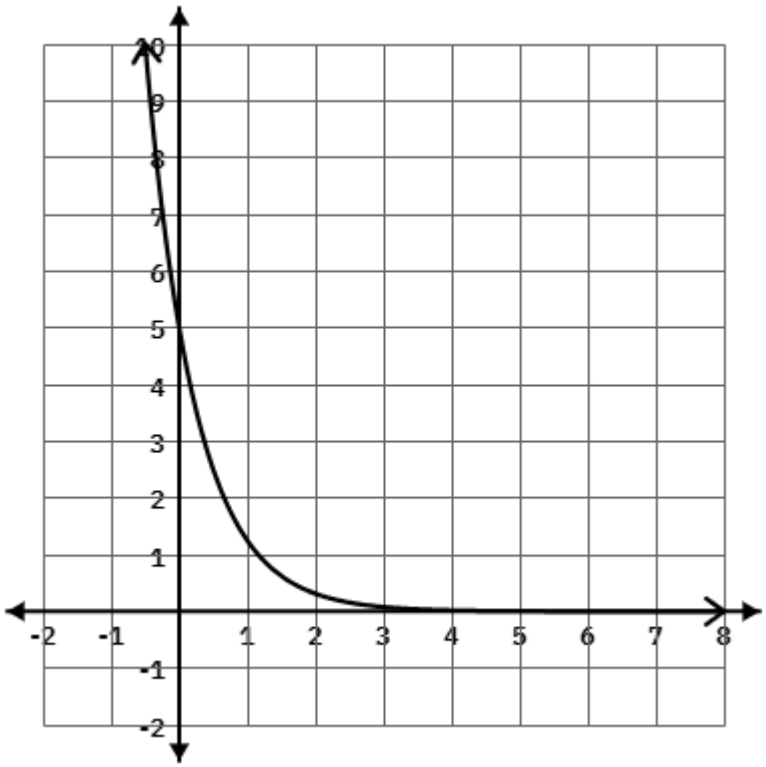
**a) 5x – 3y = 6**

**b) 5x – 3y = -18**

**c) 5x – 3y = 10**

**d) 5x – 3y = -6**

**26) An exponential function is graphed on the grid.**




**Which function is best represented by the graph?**

**a)** $\boldsymbol{h(x) = 5\left(\frac{1}{4}\right)^x}$

**b)** $\boldsymbol{(x) = 5(4)^x}$

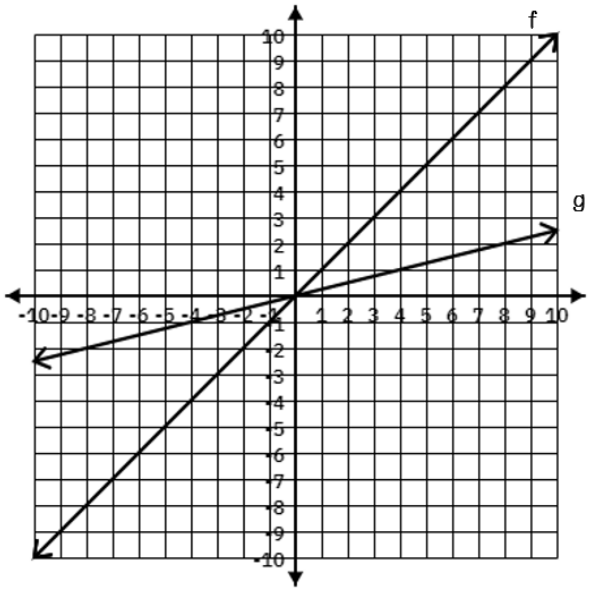
**c)** $\boldsymbol{(x) = 5 - \left(\frac{1}{4}\right)^x}$

**d)** $\boldsymbol{(x) = 5 - (4)^x}$

**27) State the domain and range of the function $y = 4^x$.**

**Domain: _____ Range: _____**

**28) The graphs of f and g are shown on the grid.**




**Which function is best represented by the graph of g?**

**a) g(x) = f(x) – 4**

**b) g(x) = 4f(x)**

**c) g(x) = f(x) + 4**

**d) g(x) = $\frac{1}{4}$ f(x)**

**29) Which inequality represents the solution to 6(x + $\frac{2}{3}$) ≤ -2x + 20 ?**

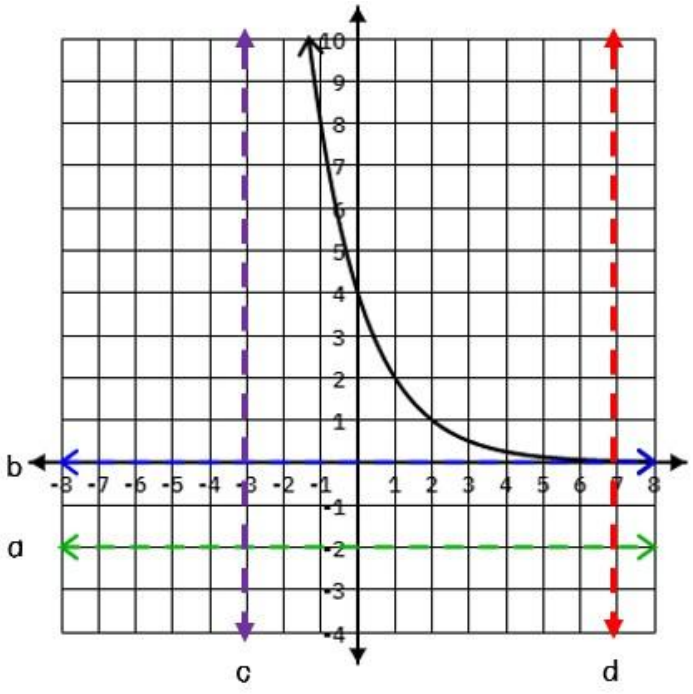
**a) x ≤ 2**

**b) x ≥ 2**

**c) x ≤ -3**

**d) x ≥ 3**

**30) The graph of an exponential function is shown on the grid.**




**Which dashed line is an asymptote for the graph?**

**a) Line a**

**b) Line b**

**c) Line c**

**d) Line d**

**31) Which association is most likely to cause the water level of a lake to increase?**

**a) The average daily temperature increases.**

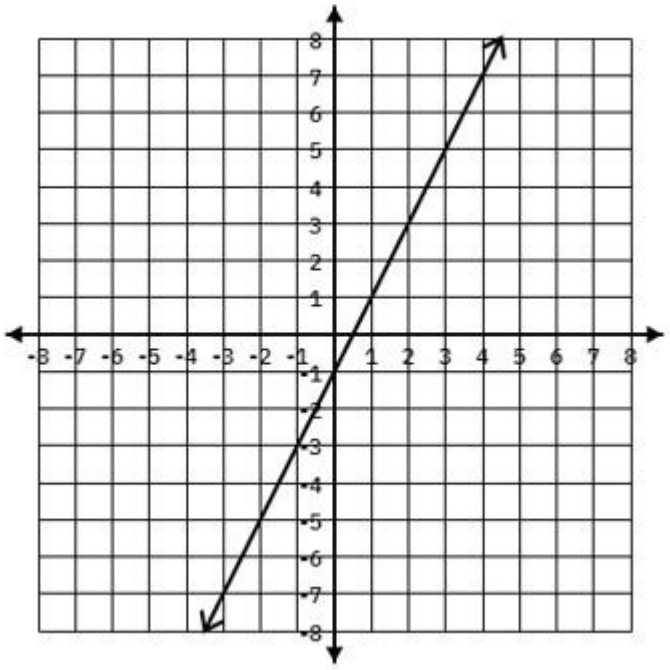
**b) A decrease in the amount of snow falling.**

**c) The amount of water people drink decreases.**

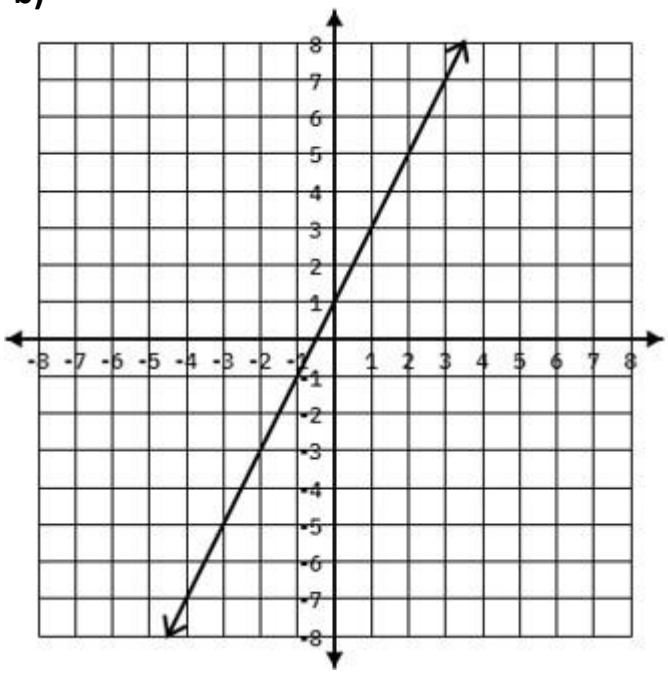
**d) The average daily rain increases.**

**32) Which graph shows a slope of -2 and a y-intercept of 1?**

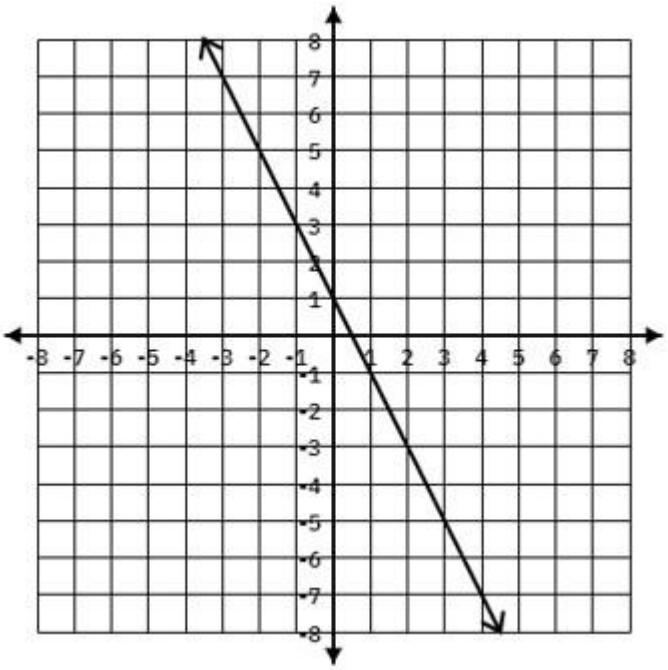
**a)**



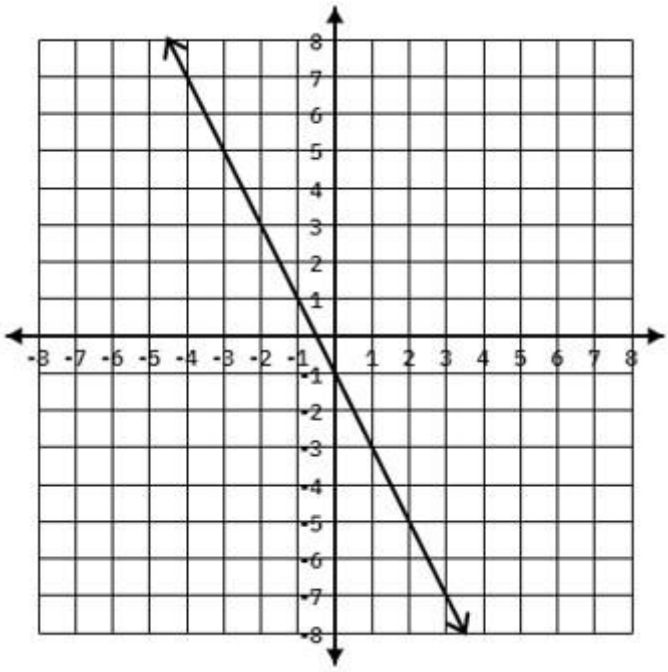
**b)**



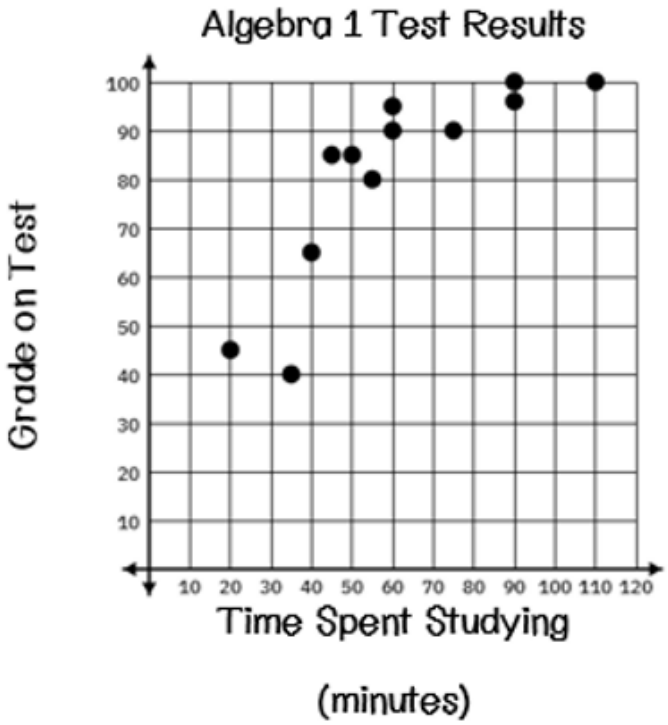
**c)**



**d)**



**33) The figure is a scatter plot of ordered pairs relating test scores and the amount of time spent studying in minutes. What type of correlation fits this data?**




**a) Strong positive**

**b) Weak positive**

**c) Strong negative**

**d) There is no correlation**

**34) A student graphed f(x) = x and g(x) = f(x) + 6 on the same coordinate grid. Which statement describes how the graphs of f and g are related.**

**a) The graph of f is steeper than the graph of g.**

**b) The graph of f is shifted 6 units down to create the graph of g.**

**c) The graph of f is less steep than the graph of g.**

**d) The graph of f is shifted 6 units up to create the graph of g.**

**35 Which table of data exhibits the exponential behavior of $y = 4^x$?**

**a)**

| x | y |
|---|---|
| 0 | 2 |
| 1 | 5 |
| 2 | 25 |
| 3 | 125 |
| 4 | 624 |

**b)**

| x | y |
|---|---|
| 0 | 1 |
| 1 | 4 |
| 2 | 16 |
| 3 | 64 |
| 4 | 256 |

**c)**

| x | y |
|---|---|
| 0 | 4 |
| 1 | 16 |
| 2 | 64 |
| 3 | 256 |
| 4 | 1024 |

**d)**

| x | y |
|---|---|
| 0 | 0 |
| 1 | 2 |
| 2 | 4 |
| 3 | 8 |
| 4 | 16 |

**36) The distance that a car is traveling is changing at a constate rate. The table shows the linear relationship between y, the distance of the car in miles, and x, the time in minutes.**

**Car's Distance**

| Time, x (minutes) | Distance, y (miles) |
|---|---|
| 5 | 200 |
| 12.4 | 496 |
| 20.2 | 808 |

**Complete the statement tat describes the rate of change of the distance the car is traveling with respect to time.**

**Choose the correct answer from each drop-down menu to complete the sentence.**

**The distance of the car (decreases / increase) at a rate of (40 / 80 / 296 / 312) miles per minutes.**

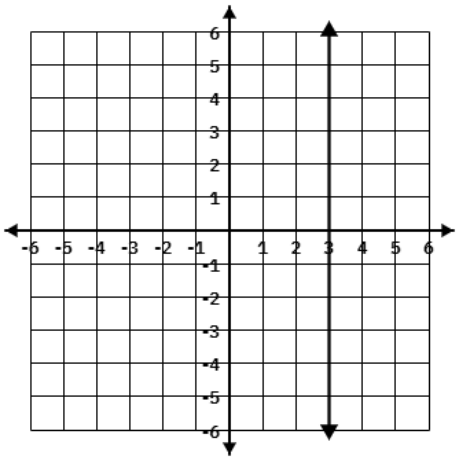
**37) The value of y varies directly with x. When the value of x is 8, the value of y is 64.**

**What is the constant of variation when y is a function of x, and what is the value of y when x = 2?**

**The constant of variation is _____**

**The value of y when x = 2 is _____**

**38) A line is graphed on a coordinate grid.**




**Which statement about the line is true?**

**a) The equation of the line is y = 3, and the slope is equal to 3.**

**b) The equation of the line is x = 3, and the slope is equal to 3.**

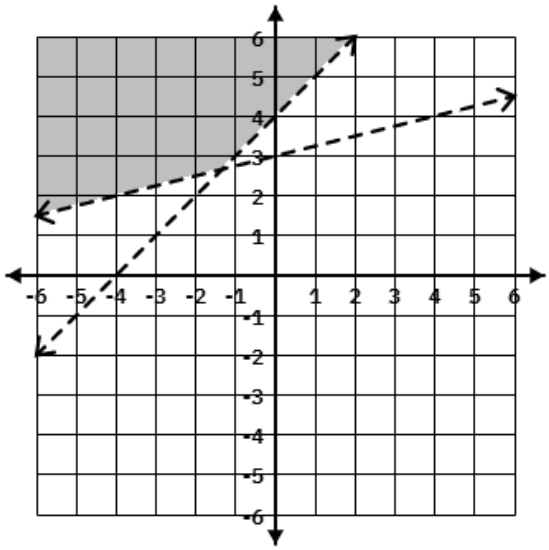
**c) The equation of the line is y = 3, and the slope is undefined.**

**d) The equation of the line is x = 3, and the slope is undefined.**

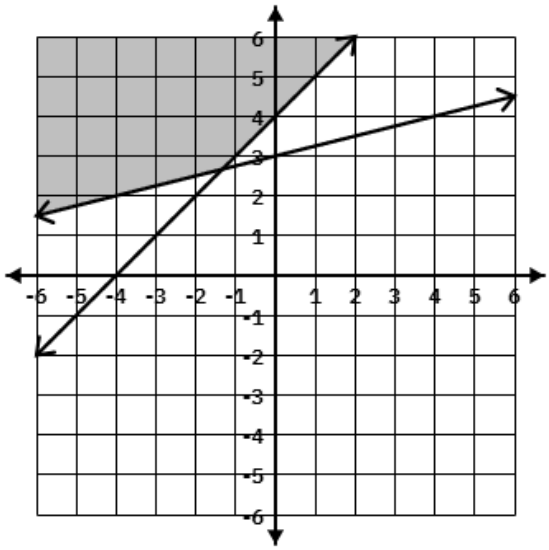
**39) Which graph best represents the solution set for this system of inequalities?**

$$y - x > 4$$
$$x - 4y < -12$$

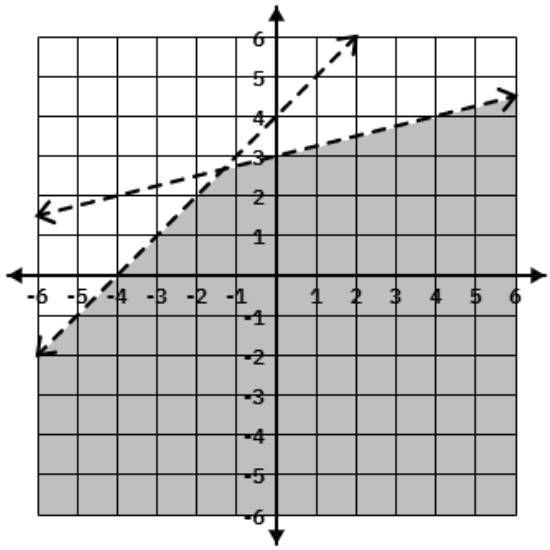
**a)**



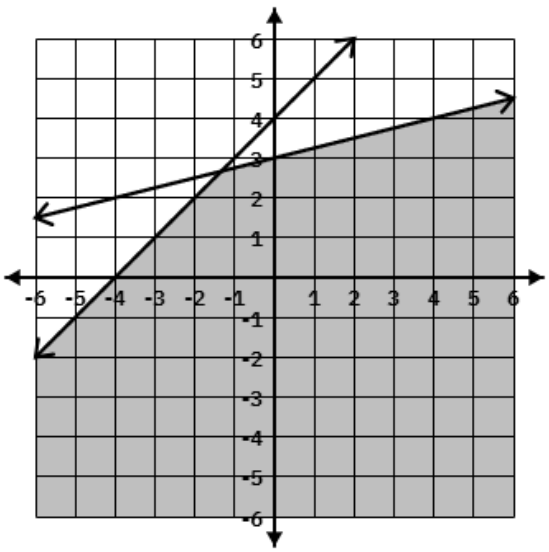
**b)**



**c)**

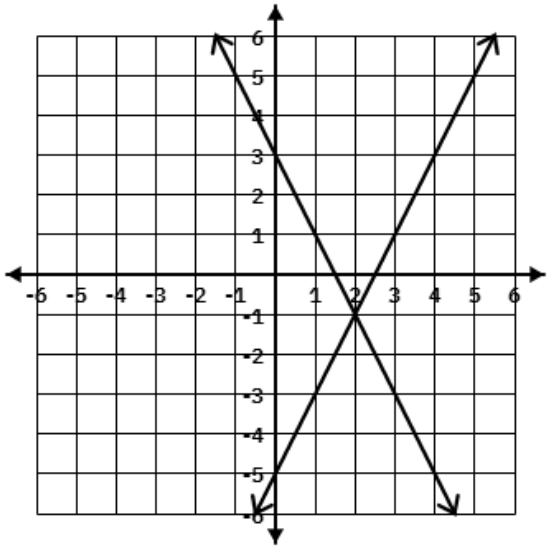


**d)**

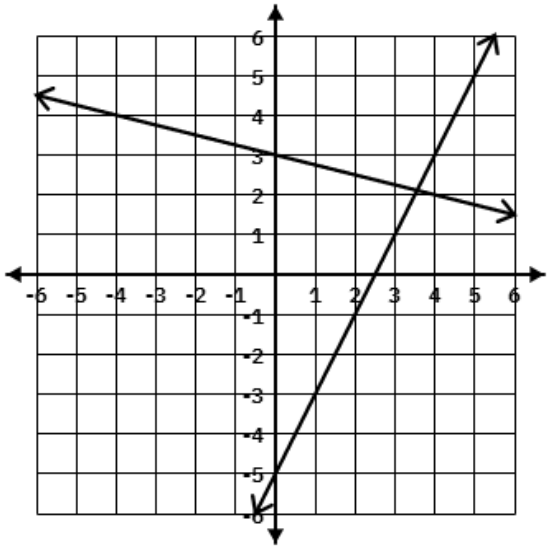


**40) Which graph best represents a system of equations that has no solution?**

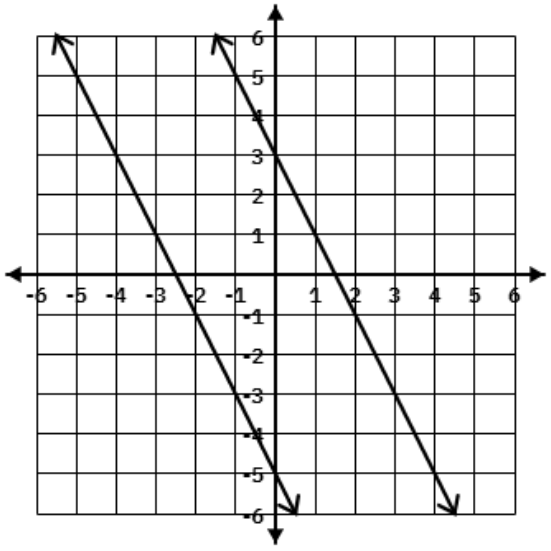
**a)**



**b)**



**c)**



**d)**