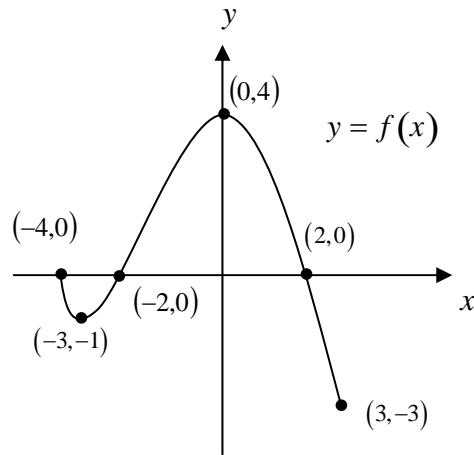


1. Find the distance between the points $A(4,-1)$ and $B(-2,3)$.

- A. 10
- B. $2\sqrt{5}$
- C. $2\sqrt{13}$
- D. $\sqrt{2}$
- E. $2\sqrt{2}$

Given below is the graph of a function, $y = f(x)$. Use this graph to answer questions #2 and #3:



2. Find the domain of this function.

- A. $[-3, 0]$
- B. $[-4, 3]$
- C. $[-3, 4]$
- D. $[-2, 2]$
- E. None of the above

3. Find the interval(s) for which the function is decreasing.

- A. $[-3, 0]$
- B. $[-4, -2] \cup [2, 3]$
- C. $[-2, 2]$
- D. $[-4, -3] \cup [0, 3]$
- E. $[-3, -1] \cup [0, 3]$

4. Solve the inequality given below. Express your answer in interval notation.

$$9 + \frac{1}{3}x < 2x - \frac{2}{3}$$

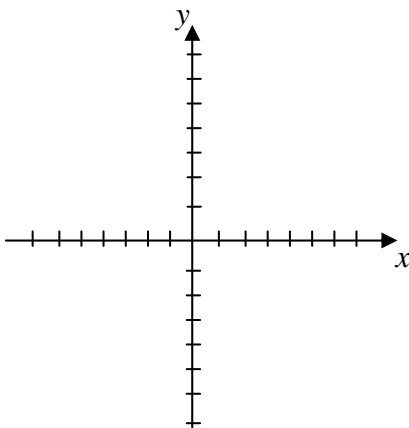
- A. $(11, \infty)$
- B. $\left(\frac{29}{5}, \infty\right)$
- C. $(-\infty, 11)$
- D. $\left(-\infty, \frac{29}{5}\right)$
- E. None of the above

5. Solve the absolute value inequality given below. Express your answer in interval notation.

$$|2x - 5| \geq 3$$

- A. $(-\infty, 1] \cup [4, \infty)$
- B. $(-\infty, -4] \cup [4, \infty)$
- C. $[1, 4]$
- D. $[4, \infty)$
- E. None of the above

6. Which of the following is (are) true about the graph of $3x + 4y = 8$?



- I. The y-intercept is $(0, 2)$.
 - II. The graph is a line in QII, QIII, and QIV.
 - III. The slope of a line perpendicular to $3x + 4y = 8$ is $\frac{4}{3}$.
- A. I only.
 - B. I and II only.
 - C. I and III only.
 - D. II and III only.
 - E. All are true.

7. Solve for x . Choose the answer that best describes the solution(s).

$$\sqrt{x+1} = x-5$$

- A. There is one solution.
It is negative.
- B. There are two solutions.
Both are positive.
- C. There is one solution.
It is positive.
- D. There are two solutions.
One is positive and one is negative.
- E. There is no solution for x .

8. Multiply and express the following in the form $a+bi$.

$$\frac{5-i}{1+2i}$$

- A. $5 - \frac{1}{2}i$
- B. $-\frac{7}{3} + \frac{11}{3}i$
- C. $-1 + \frac{11}{3}i$
- D. $\frac{3}{5} - \frac{11}{5}i$
- E. $\frac{7}{5} - \frac{11}{5}i$

9. Solve for x . Simplify your solution(s).

$$x^2 + 6x + 21 = 0$$

- A. $x = -21, x = -27$
- B. $x = -3 \pm 4\sqrt{3}i$
- C. $x = -6 \pm 2\sqrt{3}i$
- D. $x = -6 \pm 4\sqrt{3}i$
- E. $x = -3 \pm 2\sqrt{3}i$

10. Find the general equation of the line through the point $A(4,3)$ and parallel to the line $y = \frac{1}{2}x + 7$.

A. $x - 2y = -2$

B. $2x - y = 5$

C. $x - 2y = -5$

D. $2x - y = 2$

E. $x - 2y = -14$

11. Find the equation of the circle with center $C(5,-1)$ and passing through the point $P(6,-3)$.

A. $(x-5)^2 + (y+1)^2 = 137$

B. $(x+5)^2 + (y-1)^2 = 5$

C. $(x-5)^2 + (y+1)^2 = 5$

D. $(x+5)^2 + (y-1)^2 = 137$

E. Not enough information given.

12. Given $f(x) = x^2 - x - 3$, find and simplify $\frac{f(a+h) - f(a)}{h}$.

A. $h - 1$

B. $2a - 1$

C. $h - 2a - 3$

D. $2a + h - 1$

E. $\frac{a^2 - a - 3}{h}$

13. Anthony can rake leaves in his yard alone in 90 minutes. If his brother helps with a second rake, they can do the same job together in 40 minutes. How long would it take his brother to do the same job alone?
- A. 68 minutes
 B. 72 minutes
 C. 55 minutes
 D. 60 minutes
 E. None of the above
14. A baby elephant weighed 75 kg at birth and four years later, weighed 90 kg. Assume that the elephant's weight, W , (in kg) is linearly related to age t (in years) during this time period. Express W as a function of t .

A. $W(t) = \frac{15}{4}t + 75$

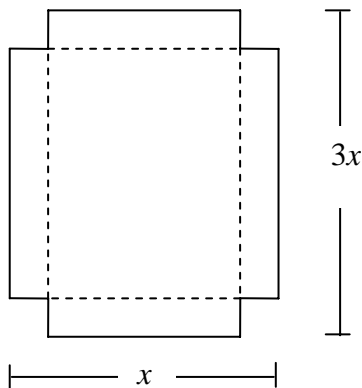
B. $W(t) = \frac{4}{15}t + 75$

C. $W(t) = -\frac{15}{4}t + 90$

D. $W(t) = -\frac{4}{15}t + 90$

E. None of the above.

15. A box with an open top is to be made by cutting 5-inch squares from the corners of a rectangular sheet whose length is three times the width and folding up the remaining flaps (see the figure). The volume of the resulting box is to be 180 cubic inches. If x represents the width of the rectangular sheet, choose the equation that would be used to solve for x . Simplify your equation but do not solve.



A. $15x^2 = 180$

B. $3x^2 - 40x + 82 = 0$

C. $3x^2 - 20x - 11 = 0$

D. $3x^2 - 20x + 7 = 0$

E. $3x^2 - 40x + 64 = 0$