1. Find the equation of the line described below. Write the linear equation as $y = mx + b$ and choose the intervals that contain m and b.

Parallel to $7x - 3y = 3$ and passing through the point $(-6, -4)$.

A. $m \in [-0.8, 2.2]$ $b \in [8, 12]$

B. $m \in [1.1, 3.6]$ $b \in [-16, -8]$

C. $m \in [-2.6, -0.7]$ $b \in [-23, -17]$

D. $m \in [1.1, 3.6]$ $b \in [-1, 7]$

E. $m \in [1.1, 3.6]$ $b \in [8, 12]$

---

2. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x + 5) + 5$$

A. $(-\infty, a), a \in [-9, -4]$

B. $[a, \infty), a \in [-1, 10]$

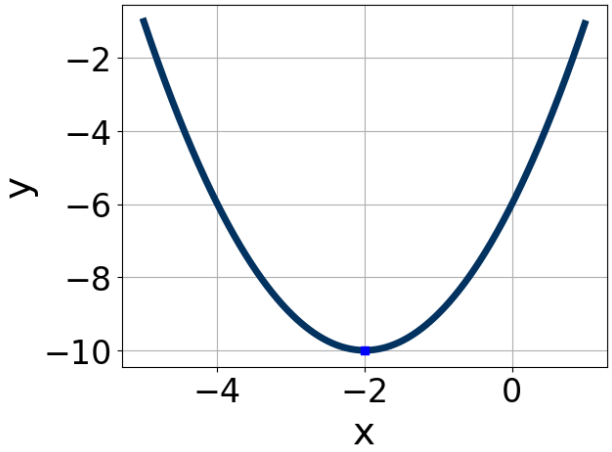
C. $[a, \infty), a \in [-9, -4]$

D. $(-\infty, a), a \in [-1, 10]$

E. $(-\infty, \infty)$

---

3. Write the equation of the graph presented below in the form $f(x) = ax^2 + bx + c$, assuming $a = 1$ or $a = -1$. Then, choose the intervals that a, b, and c belong to.



A. $a \in [-5, 0]$, $b \in [3, 5]$, and $c \in [-18, -13]$

B. $a \in [-5, 0]$, $b \in [-8, -2]$, and $c \in [-18, -13]$

C. $a \in [0, 2]$, $b \in [3, 5]$, and $c \in [-8, -5]$

D. $a \in [0, 2]$, $b \in [-8, -2]$, and $c \in [13, 17]$

E. $a \in [0, 2]$, $b \in [-8, -2]$, and $c \in [-8, -5]$

---

4. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{2}{5}, \frac{-3}{2}, \text{ and } -6$$

A. $a \in [2, 15], b \in [67, 74], c \in [57, 62]$, and $d \in [-40, -33]$

B. $a \in [2, 15], b \in [43, 51], c \in [-73, -62]$, and $d \in [-40, -33]$

C. $a \in [2, 15], b \in [67, 74], c \in [57, 62]$, and $d \in [34, 42]$

D. $a \in [2, 15], b \in [78, 84], c \in [114, 121]$, and $d \in [34, 42]$

E. $a \in [2, 15], b \in [-74, -65], c \in [57, 62]$, and $d \in [34, 42]$

---

5. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-8x - 10 < 10x + 9$$

A. $(-\infty, a)$, where $a \in [-1, 3]$

B. (a, ∞), where $a \in [-2.2, -0.7]$

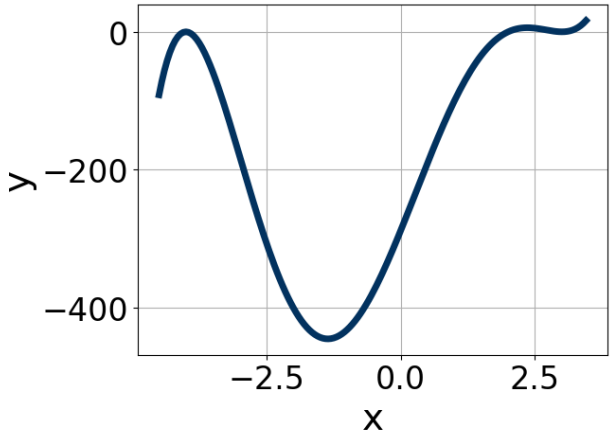
C. $(-\infty, a)$, where $a \in [-4, 1]$

D. (a, ∞), where $a \in [0.5, 2.2]$

E. None of the above.

---

6. Which of the following equations *could* be of the graph presented below?



A. $15(x-3)^{10}(x+4)^{5}(x-2)^{8}$

B. $-18(x-3)^{8}(x+4)^{8}(x-2)^{7}$

C. $-11(x-3)^{6}(x+4)^{6}(x-2)^{4}$

D. $12(x-3)^{10}(x+4)^{6}(x-2)^{5}$

E. $14(x-3)^{6}(x+4)^{9}(x-2)^{9}$

---

7. What is the domain of the function below?

$$f(x) = \sqrt[8]{7x + 8}$$

A. $[a, \infty)$, where $a \in [-1.69, -1.01]$

B. $(-\infty, \infty)$

C. $(-\infty, a]$, where $a \in [-0.94, -0.45]$

D. $[a, \infty)$, where $a \in [-1.12, 0.23]$

E. $(-\infty, a]$, where $a \in [-2.4, -1.08]$

---

8. Solve the linear equation below. Then, choose the interval that contains the solution.

$$\frac{-5x+7}{2} - \frac{-7x-9}{3} = \frac{8x+4}{7}$$

A. $x \in [3.6, 5.4]$

B. $x \in [0.8, 1.4]$

C. $x \in [8.9, 10]$

D. $x \in [-0.8, 0.8]$

E. There are no real solutions.

---

9. First, find the equation of the line containing the two points below. Then, write the equation as $y = mx + b$ and choose the intervals that contain m and b.

$$(-3, 5) \text{ and } (8, -8)$$

A. $m \in [-7, 0]$ $b \in [1.44, 2.15]$

B. $m \in [-7, 0]$ $b \in [7.72, 8.05]$

C. $m \in [0, 3]$ $b \in [-17.89, -16.45]$

D. $m \in [-7, 0]$ $b \in [-1.59, -0.27]$

E. $m \in [-7, 0]$ $b \in [-16.36, -15.83]$

---

10. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$-9 - 9x \leq \frac{-13x - 9}{5} < 4 - 3x$$

A. $(-\infty, a) \cup [b, \infty)$, where $a \in [-0.5, 1.4]$ and $b \in [-18, -10]$

B. $[a, b)$, where $a \in [0.7, 1.3]$ and $b \in [-15, -13]$

C. $(a, b]$, where $a \in [-1, 2]$ and $b \in [-16, -13]$

D. $(-\infty, a] \cup (b, \infty)$, where $a \in [0, 2]$ and $b \in [-15, -12]$

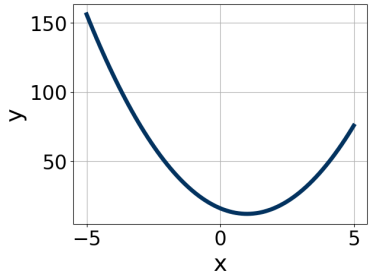
E. None of the above.

---

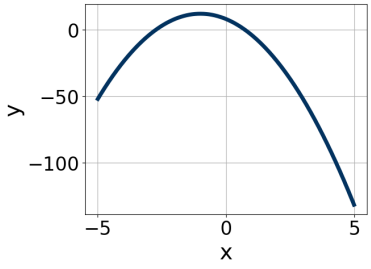
11. Graph the equation below.

$$f(x) = (x + 1)^2 + 12$$

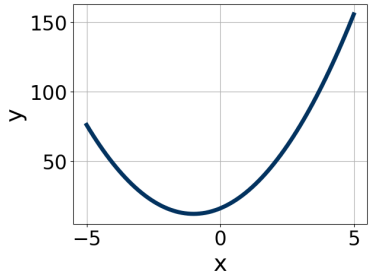
A.



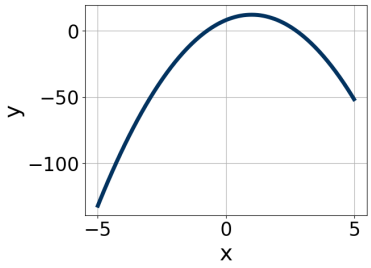
C.



B.



D.



E. None of the above.

---

12. Solve the quadratic equation below. Then, choose the intervals that the solutions belong to, with $x_1 \leq x_2$ (if they exist).

$$10x^2 + 14x - 2 = 0$$

A. $x_1 \in [-16.2, -14.9]$ and $x_2 \in [1.26, 1.34]$

B. $x_1 \in [-1.2, 1.4]$ and $x_2 \in [1.36, 2.66]$

C. $x_1 \in [-18, -16.9]$ and $x_2 \in [15.75, 16.04]$

D. $x_1 \in [-1.7, -1.3]$ and $x_2 \in [-0.25, 0.43]$

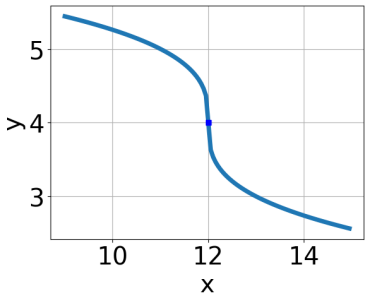
E. There are no Real solutions.

---

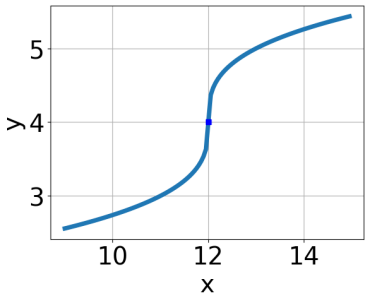
13. Choose the graph of the equation below.

$$f(x) = -\sqrt[3]{x + 12} + 4$$

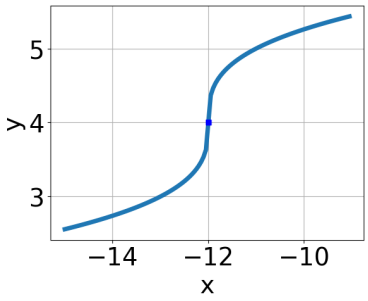
A.



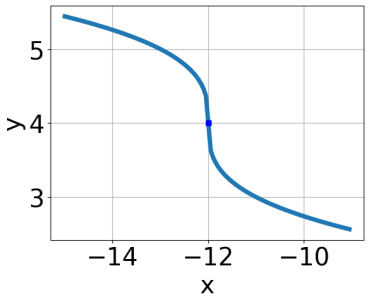
C.



B.



D.



E. None of the above.

---

14. Which of the following intervals describes the Range of the function below?

$$f(x) = -e^{x+8} - 3$$

A. $[a, \infty), a \in [1, 7]$

B. $(a, \infty), a \in [1, 7]$

C. $(-\infty, a), a \in [-11, 2]$

D. $(-\infty, a], a \in [-11, 2]$

E. $(-\infty, \infty)$

---

15. Solve the rational equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\frac{2x}{7x+7} + \frac{-4x^2}{-42x^2+42} = \frac{-6}{-6x+6}$$

A. $x_1 \in [-2.16, 0.41]$ and $x_2 \in [-3, 1]$

B. All solutions lead to invalid or complex values in the equation.

C. $x_1 \in [-2.16, 0.41]$ and $x_2 \in [0, 5]$

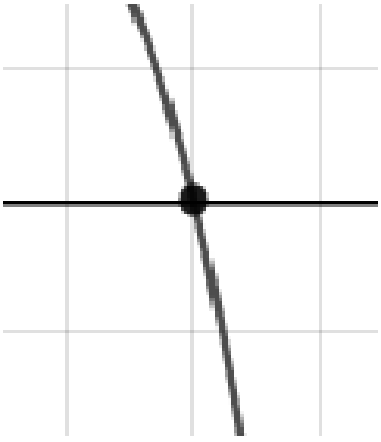
D. $x \in [0.82, 1.3]$

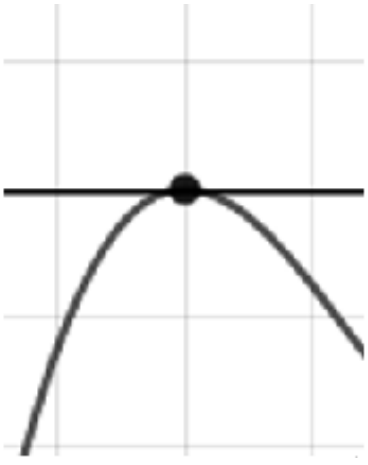
E. $x \in [3, 4.15]$

---

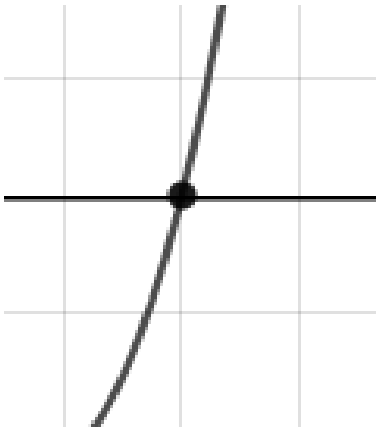
16. Describe the zero behavior of the zero $x = -6$ of the polynomial below.

$$f(x) = 5(x+7)^6(x-7)^5(x-6)^{10}(x+6)^5$$

A. 

B. 

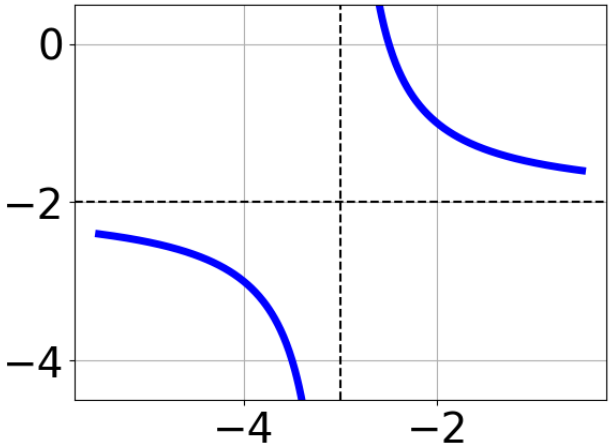
C. 

D. 

E. None of the above.

---

17. Choose the equation of the function graphed below.



A. $f(x) = \dfrac{-1}{x-3} - 8$

B. $f(x) = \dfrac{-1}{(x-3)^2} - 8$

C. $f(x) = \dfrac{1}{x+3} - 8$

D. $f(x) = \dfrac{1}{(x+3)^2} - 8$

E. None of the above

---

18. Solve the linear equation below. Then, choose the interval that contains the solution.

$$\frac{-4x-3}{8} - \frac{-3x-9}{4} = \frac{9x-8}{7}$$

A. $x \in [2.7, 4.1]$

B. $x \in [-1.7, -0.3]$

C. $x \in [12.8, 14.2]$

D. $x \in [-0.1, 0.8]$

E. There are no real solutions.

---

19. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$4^{-4x-2} = 49^{-3x+2}$$

A. $x \in [-0.1, 0.7]$

B. $x \in [-11.9, -10.2]$

C. $x \in [0.8, 2.5]$

D. $x \in [-5, -2.1]$

E. There is no Real solution to the equation.

---

20. Choose the **smallest** set of Real numbers that the number below belongs to.

$$-\sqrt{\frac{74529}{441}}$$

A. Whole

B. Rational

C. Not a Real number

D. Integer

E. Irrational

---

21. Simplify the expression below and choose the interval the simplification is contained within.

$$7 - 19^2 + 11 \div 3 * 5 \div 9$$

A. $[-352.2, -350.6]$

B. $[369.6, 372.7]$

C. $[-356.2, -353.4]$

D. $[366, 368.5]$

E. None of the above

---

22. Simplify the expression below into the form $a + bi$. Then, choose the intervals that a and b belong to.

$$\frac{-18 - 33i}{5 + 8i}$$

A. $a \in [-4.35, -3.65]$ and $b \in [-0.3, 0.05]$

B. $a \in [1.65, 2.2]$ and $b \in [-3.9, -2.9]$

C. $a \in [-354.1, -353.75]$ and $b \in [-0.3, 0.05]$

D. $a \in [-4.35, -3.65]$ and $b \in [-21.15, -20.5]$

E. $a \in [-3.8, -2.8]$ and $b \in [-4.5, -4.1]$

---

23. Solve the radical equation below. Then, choose the interval(s) that the solution(s) belongs to.

$$\sqrt{-3x - 6} - \sqrt{-4x - 5} = 0$$

A. All solutions lead to invalid or complex values in the equation.

B. $x_1 \in [-7, 0]$ and $x_2 \in [-0.2, 1.7]$

C. $x_1 \in [-7, 0]$ and $x_2 \in [-1.7, 0]$

D. $x \in [-1, 3]$

E. $x \in [2, 13]$

---

24. Solve the linear inequality below. Then, choose the constant and interval combination that describes the solution set.

$$\frac{-10}{6} - \frac{3}{7}x \leq \frac{3}{9}x + \frac{3}{4}$$

A. $(-\infty, a]$, where $a \in [2, 5]$

B. $[a, \infty)$, where $a \in [-6, -2]$

C. $[a, \infty)$, where $a \in [-1, 4]$

D. $(-\infty, a]$, where $a \in [-5, -2]$

E. None of the above.
