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

$$\sqrt{\frac{11}{0}}$$

A. Irrational

B. Integer

C. Whole

D. Rational

E. Not a Real number

---

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

$$19 - 20 \div 18 * 9 - (4 * 10)$$

A. $[-27, -20]$

B. $[55, 60]$

C. $[45, 54]$

D. $[245, 251]$

E. $[-34, -29]$

---

3. Choose the **smallest** set of Complex numbers that the number below belongs to.

$$\frac{\sqrt{60}}{17} + 8i^2$$

A. Nonreal Complex

B. Not a Complex Number

C. Irrational

D. Rational

E. Pure Imaginary

---

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

$$(6 - 10i)(-3 + 5i)$$

$a =$ ☐ $b =$ ☐

A. $a \in [27, 36]$ and $b \in [53, 66]$

B. $a \in [-72, -63]$ and $b \in [-4, 6]$

C. $a \in [-72, -63]$ and $b \in [-4, 6]$

D. $a \in [27, 36]$ and $b \in [-68, -58]$

E. $a \in [-22, -10]$ and $b \in [-52, -48]$

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

$$\frac{54 - 11i}{-2 + 4i}$$

$a =$ ☐ $b =$ ☐

A. $a \in [-28, -21]$ and $b \in [-6, -2]$

B. $a \in [-4, 2]$ and $b \in [9, 14]$

C. $a \in [-13, -6]$ and $b \in [-13, -7]$

D. $a \in [-13, -6]$ and $b \in [-197, -189]$

E. $a \in [-153, -151]$ and $b \in [-13, -7]$

---

6. 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.

$$(6, -4) \text{ and } (2, 5)$$

$m =$ ☐ $b =$ ☐

A. $m \in [-5, -2]$ and $b \in [-9.96, -8.71]$

B. $m \in [-5, 0]$ and $b \in [2.76, 4.17]$

C. $m \in [-3, -1]$ and $b \in [9.04, 10.42]$

D. $m \in [-2, 5]$ and $b \in [0.01, 0.56]$

E. $m \in [-3, 1]$ and $b \in [-10.34, -9.98]$

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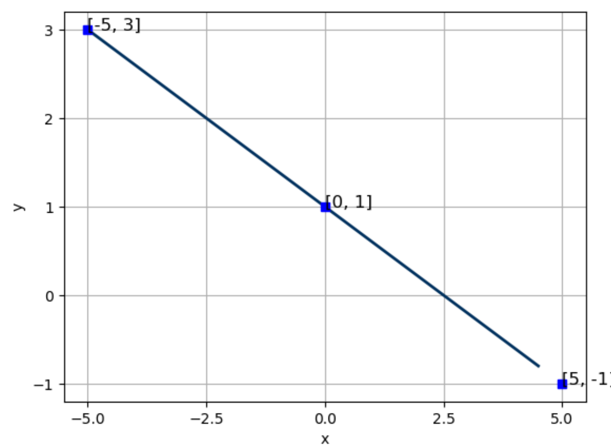
7. Write the equation of the line in the graph below in the form $Ax + By = C$. Then, choose the intervals that contain $A, B,$ and C.



$A =$ ☐ $B =$ ☐ $C =$ ☐

A. $A \in [4.73, 5.32]$, $B \in [-3.69, -1.76]$, and $C \in [-3.1, -1.3]$

B. $A \in [-2.38, -1.52]$, $B \in [-6.13, -4.39]$, and $C \in [-8.3, -4.5]$

C. $A \in [1.47, 2.38]$, $B \in [3.21, 6.14]$, and $C \in [1.7, 5.4]$

D. $A \in [2.28, 2.92]$, $B \in [-1.8, -0.93]$, and $C \in [-3.1, -1.3]$

E. $A \in [0.04, 0.49]$, $B \in [0.47, 2.13]$, and $C \in [-0.1, 3]$

---

8. 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.

Perpendicular to $5x - 4y = 3$ and passing through the point $(5, -9)$.

$m =$ ☐ $b =$ ☐

A. $m \in [-1, 2]$ and $b \in [-2, 2]$

B. $m \in [-3, 2]$ and $b \in [4, 7]$

C. $m \in [-2, -1.1]$ and $b \in [-6, -2]$

D. $m \in [-1.2, -0.2]$ and $b \in [-6, -4]$

E. $m \in [0.7, 1.7]$ and $b \in [-15, -12]$

---

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

$$-6(-9x - 2) = -13(-8x + 3)$$

$x =$ ☐

A. $x \in [0.9, 1.18]$

B. $x \in [0.29, 0.51]$

C. $x \in [0.06, 0.27]$

D. $x \in [-0.55, -0.48]$

E. There are no Real solutions.

---

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

$$\frac{-3x - 5}{2} - \frac{-7x + 8}{4} = \frac{8x + 6}{3}$$

$x =$ ☐

A. $x \in [-1.24, -0.79]$

B. $x \in [-8.09, -7.53]$

C. $x \in [-3, -2.66]$

D. $x \in [-1.91, -1.6]$

E. There are no Real solutions.

---

11. Using an interval or intervals, describe all the x-values within or including a distance of the given values.

No more than 7 units from the number 4.

A. $(3, 11)$

B. $[3, 11]$

C. $(-3, 11)$

D. $[-3, 11]$

---

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

$$5x + 4 \leq 6x + 6$$

$a =$ ☐

A. $(-\infty, a]$, where $a \in [1.1, 4.7]$

B. $[a, \infty)$, where $a \in [-2.4, -0.5]$

C. $[a, \infty)$, where $a \in [1, 3]$

D. $(-\infty, a]$, where $a \in [-5, 0]$

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

---

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

$$\frac{x}{3} + \frac{7}{8} > \frac{3x}{2} - \frac{8}{3}$$

$a =$ ☐

A. (a, ∞), where $a \in [1, 6]$

B. (a, ∞), where $a \in [-8, 0]$

C. $(-\infty, a)$, where $a \in [2, 4]$

D. $(-\infty, a)$, where $a \in [-7, -2]$

E. There is no solution to the inequality.

---

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

$$-6 + 3x > 6x \quad \text{or} \quad 9 - 3x < 6x$$

$a =$ ☐ $b =$ ☐

A. $(-\infty, a) \cup (b, \infty)$, where $a \in [-2.7, -1.63]$ and $b \in [0.7, 1.9]$

B. $(-\infty, a] \cup [b, \infty)$, where $a \in [-3.8, -1.8]$ and $b \in [0.84, 1.25]$

C. $(-\infty, a] \cup [b, \infty)$, where $a \in [-1.9, 0.3]$ and $b \in [1.29, 2.23]$

D. $(-\infty, a) \cup (b, \infty)$, where $a \in [-1.36, 1.11]$ and $b \in [1.4, 4.7]$

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

---

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

$$-5 + 8x < \frac{75x + 3}{9} \leq -4 + 5x$$

$a =$ ☐ $b =$ ☐

A. $(a, b]$, where $a \in [-2, 2]$ and $b \in [12, 17]$

B. $[a, b)$, where $a \in [0, 3]$ and $b \in [11, 17]$

C. $(a, b]$, where $a \in [-19, -11]$ and $b \in [-9, 0]$

D. $[a, b)$, where $a \in [-19, -11]$ and $b \in [-3, 3]$

E. There is no solution to the inequality.

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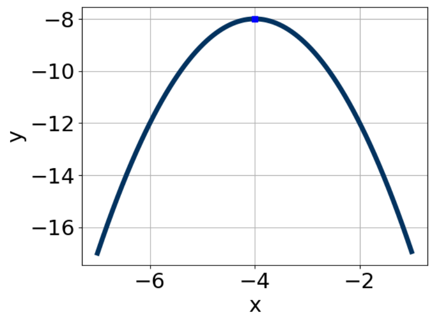
16. Write the equation of the graph presented below in the form $f(x) = ax^2 + bx + c$, assuming $a = 1$ or $a = -1$. Then, choose the intervals that $a, b,$ and c belong to.



$a =$ ☐ $b =$ ☐ $c =$ ☐

A. $a \in [0, 2], \quad b \in [6, 9], \quad \text{and} \quad c \in [-25, -20]$

B. $a \in [-3, 0], \quad b \in [-10, -5], \quad \text{and} \quad c \in [-25, -20]$

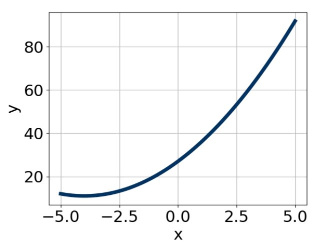
C. $a \in [-3, 0], \quad b \in [6, 9], \quad \text{and} \quad c \in [-11, -2]$

D. $a \in [-2, 0], \quad b \in [6, 9], \quad \text{and} \quad c \in [-25, -20]$

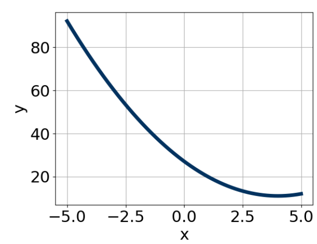
E. $a \in [-3, 0], \quad b \in [-10, -5], \quad \text{and} \quad c \in [-11, -2]$

---

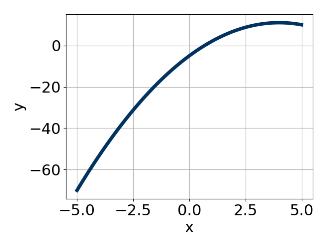
17. Graph the equation $f(x) = (x - 4)^2 + 11$.



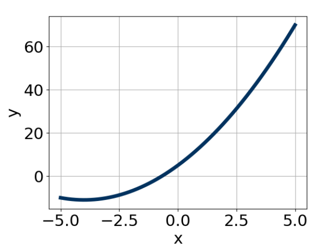
A.



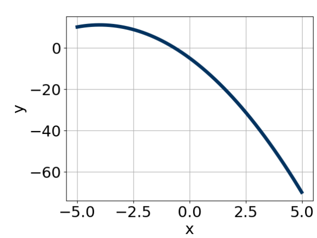
C.



D.



B.



E.

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18. Factor the quadratic below. Then, choose the intervals that contain the constants in the form $(ax+b)(cx+d); b \leq d$.

$$64x^2 - 48x + 9$$

$a =$ ☐ $b =$ ☐ $c =$ ☐ $d =$ ☐

A. $a \in [14, 17.5]$, $b \in [-3.5, -2.5]$, $c \in [3, 5.5]$, and $d \in [-3.5, -1.5]$

B. $a \in [0.5, 1.5]$, $b \in [2, 3.5]$, $c \in [63.5, 64.5]$, and $d \in [1.5, 4.5]$

C. $a \in [3.5, 6]$, $b \in [-3.5, -2.5]$, $c \in [15.5, 17]$, and $d \in [-3.5, -1.5]$

D. $a \in [0.5, 1.5]$, $b \in [-3.5, -2.5]$, $c \in [63.5, 64.5]$, and $d \in [-3.5, -1.5]$

E. $a \in [7, 8.5]$, $b \in [-3.5, -2.5]$, $c \in [7.5, 8.5]$, and $d \in [-3.5, -1.5]$

---

19. Solve the quadratic equation below. Then, choose the intervals that the solutions x_1 and x_2 belong to, with $z_1 \leq z_2$.

$$324x^2 - 9 = 0$$

$x_1 =$ ☐ $x_2 =$ ☐

A. $x_1 \in [-0.04, 0]$ and $x_2 \in [2.94, 3.08]$

B. $x_1 \in [-3, -2.98]$ and $x_2 \in [-0.02, 0.03]$

C. $x_1 \in [-0.06, -0.03]$ and $x_2 \in [0.44, 0.54]$

D. $x_1 \in [-0.19, -0.06]$ and $x_2 \in [0.14, 0.23]$

E. $x_1 \in [-0.54, -0.44]$ and $x_2 \in [0.03, 0.13]$

---

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

$$-7x^2 - 7x + 2 = 0$$

$x_1 =$ ☐ $x_2 =$ ☐

A. $x_1 \in [-1.61, -1.17]$ and $x_2 \in [-0.16, 0.69]$

B. $x_1 \in [-8.76, -8.57]$ and $x_2 \in [1.47, 1.96]$

C. $x_1 \in [-1.77, -1.59]$ and $x_2 \in [8.48, 9.13]$

D. $x_1 \in [-0.45, 0.51]$ and $x_2 \in [0.72, 1.24]$

E. There are no Real solutions.
