MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the inequality. Express your answer using interval notation. Graph the solution set.

1) \(6x - 7 > 5x - 4\)

A) \((-\infty, 3]\)

B) \((-11, \infty)\)

C) \((3, \infty)\)

D) \([3, \infty)\)

2) \(|4k + 3| \geq 8\)

A) \((-\frac{11}{4}, -\frac{5}{4})\)

B) \([-\frac{11}{4}, \frac{5}{4}]\)

C) \((-\infty, -\frac{11}{4}] \cup [\frac{5}{4}, \infty)\)

D) \([\frac{5}{4}, \infty)\)
Find the real solutions of the equation.
3) \(x^{2/3} - 6x^{1/3} + 8 = 0\)
   A) \{-64, -8\}  B) \{-4, -2\}  C) \{8, 64\}  D) \{2, 4\}

4) \(\sqrt[3]{3x + 10} - \sqrt{x + 2} = 2\)
   A) \{-3\}  B) \{-2, 2\}  C) \{2\}  D) \{-2\}

5) \(\sqrt{y + 5} = 6\)
   A) \{31\}  B) \{41\}  C) \{36\}  D) \{121\}

Find the center \((h, k)\) and radius \(r\) of the circle.
6) \(4x^2 + 4y^2 - 12x + 16y - 5 = 0\)
   A) \((h, k) = (-\frac{3}{2}, 2);\  r = \frac{3\sqrt{30}}{2}\)  B) \((h, k) = (\frac{3}{2}, -2);\  r = \frac{3\sqrt{5}}{2}\)
   C) \((h, k) = (-\frac{3}{2}, 2);\  r = \frac{3\sqrt{5}}{2}\)  D) \((h, k) = (\frac{3}{2}, -2);\  r = \frac{3\sqrt{30}}{2}\)

Solve the equation.
7) \(|x - 4| = 0\)
   A) \{-4\}  B) \{4\}  C) \{-4, 4\}  D) no real solution

Write the expression in the standard form \(a + bi\).
8) \((8 + 3i)(2 - 6i)\)
   A) 34 - 42i  B) 34 + 42i  C) -18i^2 - 42i + 16  D) -2 + 54i

9) \(\frac{13 + 35i}{5 + 3i}\)
   A) 5 + 4i  B) 4 + 5i  C) 5 - 4i  D) 4 - 5i

10) \((6 - 3i) + (2 + 7i)\)
    A) 8 + 4i  B) -8 - 4i  C) 8 - 4i  D) 4 + 10i

Write the general form of the equation of the circle with radius \(r\) and center \((h, k)\).
11) \(r = 7;\ (h, k) = (-3, -6)\)
    A) \(x^2 + y^2 - 6x + 12y - 4 = 0\)  B) \(x^2 + y^2 + 6x + 12y - 4 = 0\)
    C) \(x^2 + y^2 + 6x - 12y - 4 = 0\)  D) \(x^2 + y^2 - 6x + 12y - 4 = 0\)

Write the standard form of the equation of the circle with radius \(r\) and center \((h, k)\).
12) \(r = 5;\ (h, k) = (-6, 3)\)
    A) \((x + 6)^2 + (y - 3)^2 = 25\)  B) \((x - 6)^2 + (y + 3)^2 = 5\)
    C) \((x + 6)^2 + (y - 3)^2 = 5\)  D) \((x - 6)^2 + (y + 3)^2 = 25\)

Find an equation for the line with the given properties. Express the answer using the general form of the equation of a line.
13) Parallel to the line \(5x + 7y = -25\); containing the point \((2, -10)\)
    A) \(5x + 7y = -60\)  B) \(5x - 7y = -60\)  C) \(2x + 7y = -25\)  D) \(7x + 5y = -10\)
Find an equation for the line with the given properties. Express the answer using the slope-intercept form of the equation of a line.

14) Containing the points (-2, -5) and (8, 3)
   A) \( y = -\frac{4}{5}x - \frac{17}{5} \)
   B) \( y = \frac{4}{5}x - \frac{17}{5} \)
   C) \( y = \frac{5}{4}x - \frac{17}{5} \)
   D) \( y + 5 = \frac{4}{5}(x + 2) \)

Find the equation of the line in slope-intercept form.

15)

\[ \text{A) } y = -3x - 11 \quad \text{B) } y = -3x + \frac{19}{2} \quad \text{C) } y = -\frac{1}{3}x - \frac{7}{11} \quad \text{D) } y = -3x + 13 \]

Without solving, determine the character of the solutions of the equation in the complex number system.

16) \( x^2 - 5x + 8 = 0 \)
   A) a repeated real solution
   B) two unequal real solutions
   C) two complex solutions that are conjugates of each other

Find the general form of the equation of the circle.

17) With endpoints of a diameter at (6, -2) and (-4, 4)
   A) \( x^2 + y^2 + 2x + 2y - 32 = 0 \)
   B) \( x^2 + y^2 - 2x - 2y - 32 = 0 \)
   C) \( x^2 + y^2 - 2x - 2y + 36 = 0 \)
   D) \( x^2 + y^2 - 2x - 2y + 32 = 0 \)

Find the slope of the line containing the two points.

18) (-1, -8); (7, 3)
   A) \( \frac{11}{3} \)
   B) \( \frac{11}{8} \)
   C) -5
   D) undefined