1. A jogger ran 4 miles, decreased her speed by 1 mile per hour, and then ran another 5 miles. If her total jogging time was $1\frac{17}{42}$ hours, find her speed for each part of her run.

The speed for the first part of her run was ☐ mph.

The speed for the second part of her run was ☐ mph.

2. Solve the polynomial inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$(x-5)(x+7)>0$$

What is the solution set? Select the correct choice below and fill in any answer boxes within your choice.

- ○A. The solution set is ☐. (Type your answer in interval notation.)
- ○B. The solution set is ∅.

3. Solve the absolute value inequality.

$$-6|x-9| \geq -30$$

The solution is ☐. (Type the answer using interval notation.)

4. Find the square of the radical expression.

$$\sqrt{\frac{2}{5}}$$

What is the square? ☐

5. Solve the equation using the quadratic formula.

$$x^2 + 2x - 4 = 0$$

x = □

(Simplify your answer. Type exact answers, using radicals as needed. Use a comma to separate answers.)

6. Compute the discriminant. Then determine the number and type of solutions for the given equation.

$$8x^2 - 4x + 1 = 0$$

What is the discriminant?

□

Choose the sentence that describes the number and type of solutions to the quadratic equation.

○ There are two unequal real solutions.

○ There is one real solution.

○ There are two complex imaginary solutions.

7. Solve the inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$\left| x^2 + 3x - 29 \right| > 25$$

The solution set is □ .

(Type your answer in interval notation. Use integers or fractions for any numbers in the expression.)

8.   Solve.

$$\sqrt[3]{4x - 3} + 5 = 2$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

   ◯A. $x = \blacksquare$

       (Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

   ◯B. There is no real solution.

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9.   Solve the absolute value inequality.

$$3 < |4 - 9x|$$

The solution is ☐.
(Type the answer using interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)

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10.   Solve the polynomial inequality and graph the solution set on a real number line. Express the solution set in interval notation.

$$x^3 + 4x^2 - x - 4 \geq 0$$

Choose the correct solution below.

   ◯A. $[-4, -1] \cup [1, \infty)$ ◯B. $(-\infty, -4) \cup (-1, 1)$

   ◯C. $(-\infty, -4] \cup [-1, 1]$ ◯D. $\varnothing$