

Student: \_\_\_\_\_  
Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Instructor: Josh Ducey  
Program: Math 199E (Version for Math  
205), Fall 2014  
Test Bank: MyMathTest: Basic Algebra,  
Precalculus and Calculus

Assignment: Qualifier 4: Equations and  
Inequalities

1. Solve and check the linear equation.

$$4(x - 5) - 5(x - 4) = x + 4 - (x - 6)$$

x =

2. Solve.

$$\sqrt[3]{5x - 2} + 1 = -4$$

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

A. x =

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

B. There is no real solution.

3. A jogger ran 6 miles, decreased her speed by 1 mile per hour, and then ran another 7 miles. If her total jogging time was  $2\frac{19}{20}$  hours, find her speed for each part of her run.

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

(Type an integer or a decimal.)

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

(Type an integer or a decimal.)

4. Solve the equation using the quadratic formula.

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

x =

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

5. Solve.

$$7b^3 = 175b$$

b =

(Simplify your answer. Use a comma to separate answers as needed.)

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6. Find the square of the radical expression.

$$\sqrt{\frac{2}{3}}$$

What is the square?

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

$$(x - 2)(x + 5) > 0$$

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  $\emptyset$ .

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

$$\frac{x^2 - 2x - 3}{x^2 - 8x + 12} > 0$$

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

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

$$9x^2 - 6x + 5 = 0$$

What is the discriminant?

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

- There are two complex imaginary solutions.  
 There is one real solution.  
 There are two unequal real solutions.

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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.

$$x^3 - 5x^2 - x + 5 \geq 0$$

Choose the correct solution below.

A.  $[-1, 1] \cup [5, \infty)$

B.  $\emptyset$

C.  $(-\infty, -1] \cup [1, 5]$

D.  $(-\infty, -1) \cup (1, 5)$