

## Math 099: Test 2 Review

### Short Answer

1. Solve the following equation. If impossible, answer *no solution*. Be sure to check each answer in the original equation if you multiply both sides by an expression that contains the variable.

$$\frac{5}{x+2} + \frac{2}{x+3} = \frac{-2}{x^2 + 5x + 6}$$

2. Solve the following equation. If impossible, answer *no solution*. Be sure to check each answer in the original equation if you multiply both sides by an expression that contains the variable.

$$1 - \frac{9}{x} = \frac{-20}{x^2}$$

$$x = \underline{\hspace{2cm}}$$

3. A bathtub can be filled by the cold water faucet in 7 minutes and by the hot water faucet in 12 minutes. How long does it take to fill the tub if both faucets are open? Give the answer in minutes.
4. One plane can travel 30 miles per hour faster than another. One of them goes 345 miles in the same time it takes the other to go 300 miles. What are their speeds?

$$\underline{\hspace{1cm}}, \underline{\hspace{1cm}} \text{ miles per hour}$$

5. The sum of the reciprocals of two consecutive integers is  $\frac{13}{42}$ . Find the two integers.
6. Solve the following proportion.

$$\frac{x+2}{5} = \frac{7}{x}$$

7. Solve the equation using the quadratic equation.

$$x^2 + 3x - 4 = 0$$

$$x = \underline{\hspace{2cm}}$$

8. Solve the equation.

$$(x - 12)(x + 7) = -70$$

$$x = \underline{\hspace{2cm}}$$

9. Solve the equation.

$$x^3 + 4x^2 - 36x - 144 = 0$$

$$x = \underline{\hspace{2cm}}$$

10. Solve the equation. If impossible, write *no solution*.

$$|x| = 7$$

11. Solve the equation. If impossible, write *no solution*.

$$|\alpha| + 6 = 4$$

12. Solve the equation. If impossible, write *no solution*.

$$1 + |6t - 2| = 9$$

13. Solve the equation. If impossible, write *no solution*.

$$|5 - m| = |m + 10|$$

14. Solve the inequality. Write your answer using interval notation.

$$11 < 15 + \frac{4}{5}x < 31$$

15. Solve the inequality. Write your answer using interval notation.

$$9y - 7 \leq -2 \text{ or } 9y - 7 \geq 2$$

16. Solve the inequality using the definition of absolute value. If impossible, write *no solution*.

$$|x| \leq 4$$

17. Solve the inequality using the definition of absolute value. If impossible, write *no solution*.

$$|t| - 5 > 6$$

18. Solve the inequality using the definition of absolute value. If impossible, write *no solution*.

$$|2a + 1| + 2 \leq 7$$

**Math 099: Test 2 Review  
Answer Section**

**SHORT ANSWER**

1. no solution
2. 4, 5
3.  $\frac{84}{19}$
4. 200, 230
5. 6, 7
6. 5, -7
7. 1, -4
8. -2, 7
9. -4, 6, -6
10.  $x = -7, 7$
11. no solution
12.  $t = \frac{5}{3}, -1$
13.  $m = -\frac{5}{2}$
14.  $(-5, 20)$
15.  $\left(-\infty, \frac{5}{9}\right] \cup [1, \infty)$
16.  $[-4, 4]$
17.  $(-\infty, -11) \cup (11, \infty)$
18.  $[-3, 2]$