

NAME: \_\_\_\_\_ Score \_\_\_\_\_ /100  
Please print

SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

2 points each for questions 1 – 10. 7 points each of the other questions.

Circle T or F, whichever is correct.

1. T F Two rational expressions must have the same denominator before they can be added.
2. T F Two rational expressions must have the same denominator before they can be multiplied.
3. T F If both sides of an equation are multiplied by an expression containing a variable, the resulting equation will be equivalent to the original equation.
4. T F A fraction has been reduced if the numerator and denominator have no common factors other than 1.
5. T F Unless otherwise stated the domain of a rational expression is the largest set of real numbers for which the expression makes sense.
6. T F If  $a$  represents a real number and  $b$  and  $c$  represent non-zero real numbers then  $\frac{ac}{bc} = \frac{a}{b}$
7. T F  $-\frac{a}{b} = \frac{-a}{b} = \frac{a}{-b} = -\frac{-a}{-b}$
8. T F  $\frac{\frac{3}{4}}{\frac{5}{7}} = \left(\frac{3}{4}\right)\left(\frac{5}{7}\right)$
9. T F Every subtraction problem can be changed to an addition problem.
10. T F Every division problem can be changed to a multiplication problem.

Perform the indicated operations. Simplify the results as much as possible. **HINT: Watch for cancellations.**

11.  $\left(\frac{2x-4}{15}\right)\left(\frac{6}{2-x}\right)$

$$12. \left( \frac{2x^2 - 2}{10x + 30} \right) \left( \frac{12x + 36}{3x - 3} \right)$$

$$13. \left( \frac{x^2 - 6x + 9}{x^2 - x - 6} \right) \div \left( \frac{x^2 - 9}{4} \right)$$

$$14. \left( \frac{x - 3}{x + 4} \right) + \left( \frac{x + 2}{x - 4} \right)$$

$$15. \left( \frac{x-3}{x-4} \right) - \left( \frac{x+2}{4-x} \right)$$

$$16. \left( \frac{9x+2}{3x^2-2x-8} \right) + \left( \frac{7}{3x^2+x-4} \right).$$

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17.  $\left(\frac{17x+4}{4x}\right) - \left(\frac{17x-4}{4x}\right)$ .

18. Simplify  $\left(\frac{\frac{x+5}{x}}{\frac{x+5}{x} + 2}\right)$ .

19. What is the domain of the rational expression  $\frac{x^2 + 5x + 5}{x + 6}$

20. Find the solution set of the equation  $\frac{2x+1}{4-x} = \frac{9}{4-x}$ .

21. Find the solution set of the equation  $\frac{36}{x^2-9} + 1 = \frac{2x}{x+3}$