

$$48/48 = 100$$

Foundations for College Algebra - MTWF
University of North Georgia
Fall 2015
Exam #3

Name: Key Date: December 1, 2015

Simplify the Rational Expression completely.

$$1. \frac{2x^2y^2}{x^4y} = \frac{\cancel{2x^2}y^{\cancel{2}1}}{x^{\cancel{4}2}y} = \boxed{\frac{2y}{x^2}}$$

$$2. \frac{s^2}{t^2} \div \frac{6s^4}{t^4} = \frac{\cancel{s^2}}{\cancel{t^2}} \cdot \frac{\cancel{t^4}^2}{6s^{\cancel{4}2}} = \boxed{\frac{t^2}{6s^2}}$$

$$3. \frac{8x}{15yz} - \frac{16x}{15yz} = \frac{-8x - 16x}{15yz} = \frac{-24x}{15yz} = \boxed{\frac{8x}{5yz}}$$

$$4. \frac{11}{18rs^2} + \frac{5}{24r^2s} \quad \text{LCD: } 72r^2s^2$$
$$\frac{11(4r) + 5(3s)}{72r^2s^2} = \boxed{\frac{44r + 15s}{72r^2s^2}}$$

Solve the following equations for the specified variable.

5. $1 - \frac{2}{x} = \frac{3}{x^2}$ LCD: x^2

$$x^2(1) + x^2\left(-\frac{2}{x}\right) = x^2\left(\frac{3}{x^2}\right)$$

$$x^2 - 2x = 3$$

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

$$(x-3)(x+1) = 0$$

①	$x = 3$
②	$x = -1$

6. $x = 7 + \frac{44}{x}$ LCD: x

$$x(x) = x(7) + x\left(\frac{44}{x}\right)$$

$$x^2 = 7x + 44$$

$$x^2 - 7x - 44 = 0$$

$$(x-11)(x+4) = 0$$

①	$x = 11$
②	$x = -4$

7. $\frac{1}{3x^2} = \frac{x+3}{2x^2} - \frac{1}{6x^2}$ LCD: $6x^2$

$$2\left(\frac{1}{3x^2}\right) = 3\left(\frac{x+3}{2x^2}\right) + 6x^2\left(-\frac{1}{6x^2}\right)$$

$$2 = 3(x+3) - 1$$

$$2 = 3x + 9 - 1$$

$$2 = 3x + 8$$

$$-6 = 3x$$

$-2 = x$

Factor completely.

8. $2x - 8x^3$

$$2x(1 - 4x^2)$$

$2x(1+2x)(1-2x)$

9. $6x^2 - 11x - 10$ $a = -60$, $b = -11$

$$6x^2 - 15x + 4x - 10$$

$$3x(2x-5) + 2(2x-5)$$

$(2x-5)(3x+2)$

$-$	$+$
15	4

Simplify

$$10. \frac{40 - (3 \cdot 7 - 9)}{8 \cdot 2 - 2} = \frac{40 - (21 - 9)}{16 - 2} = \frac{40 - (12)}{14} = \frac{28}{14} = \boxed{2}$$

Solve.

$$11. 3(x - 4) = 2(x + 3) + 2$$

$$3x - 12 = 2x + 6 + 2$$
$$= 2x + 8$$

$$\boxed{x = 20}$$

12. State the **Distributive Tool** Algebraically and give an example of how it is used to factor an expression.

$$a(b+c) = ab+ac$$

$$14x + 8 = 2(7x + 4)$$

BONUS. Solve for 5 Points.

$$\frac{x-4}{6x} + \frac{x^2-3x-10}{6x} = \frac{x-1}{6} \quad \text{LCD: } 6x$$

$$6x \left(\frac{x-4}{6x} \right) + 6x \left(\frac{x^2-3x-10}{6x} \right) = 6x \left(\frac{x-1}{6} \right)$$

$$x-4 + x^2-3x-10 = x^2-x$$

$$-2x-14 = -x$$

$$-x = 14$$

$$\boxed{x = -14}$$