

October 10, 2012

$$\textcircled{21} \frac{\frac{2}{x} + 3}{\frac{4}{x^2} - 9} \quad \text{LCD} = x^2$$

$$\frac{x^2 \cdot \frac{2}{x} + x^2 \cdot 3}{x^2 - \frac{4}{x^2} - 9 \cdot x^2} = \frac{2x + 3x^2}{4 - 9x^2} \stackrel{\text{Factor}}{=} \frac{x(2+3x)}{(2-3x)(2+3x)}$$

$$\boxed{\frac{x}{2-3x}} \checkmark$$

$$\textcircled{35} \frac{x^{-1}}{x^{-2} + y^{-2}} = \frac{\frac{1}{x}}{\frac{1}{x^2} + \frac{1}{y^2}}$$

$$\text{LCD} = x^2 y^2$$

$$= \frac{1 \cdot xy^2}{1y^2 + 1x^2} = \boxed{\frac{xy^2}{y^2 + x^2}} \checkmark$$

$$\textcircled{43} \frac{3x^{-1} + (2y)^{-1}}{x^{-2}} = \frac{\frac{3}{x} + \frac{1}{2y}}{\frac{1}{x^2}} \quad \text{LCD} = 2x^2y$$

$$= \frac{3(2xy) + 1(x^2)}{1(2y)} = \boxed{\frac{6xy + x^2}{2y}} = \boxed{\frac{x(6y + x)}{2y}} \checkmark$$

$$\textcircled{18} \quad \frac{\frac{3}{x-4} - \frac{2}{4-x}}{\frac{2}{x-4} - \frac{2}{x}} = \frac{\frac{3}{x-4} + \frac{2}{x-4}}{\frac{2}{x-4} - \frac{2}{x}} \quad \text{lcd} = x(x-4)$$

$$\frac{3x + 2x}{2x - 2(x-4)} = \frac{5x}{2x - 2x + 8} = \frac{5x}{8}$$

## Section 6.5

### Solving Rational Equations

$$\frac{2}{3}x + \frac{3}{4} = \frac{1}{2} \quad \text{lcd} = 12$$

$$\cancel{12} \cdot \frac{2}{3}x + \cancel{12} \cdot \frac{3}{4} = \cancel{12} \cdot \frac{1}{2}$$

$$8x + 9 = 6 \quad = 8x = -3 \quad = \boxed{x = \frac{-3}{8}} \quad \checkmark$$

$$\textcircled{16} \quad \frac{4x^2 - 24x}{(3x+2)(x-1)} + \frac{3}{3x+2} = \frac{-4}{x-1} \quad \text{lcd} = (3x+2)(x-1)$$

$$4x^2 - 24x + 3(x-1) = -4(3x+2)$$

$$4x^2 - 24x + 3x - 3 = -12x - 8$$

$$4x^2 - 24x + 3x + 12x - 3 + 8 = 0$$

$$4x^2 - 9x + 5 = 0$$

$$(4x-5)(x-1) = 0$$