SEW Math 090 **Worksheet 6.2: Multiplying and Dividing Rational Expressions** Summer 2016

1. Multiply or divide, as indicated. Remember to cancel first!

(a) $\frac{8w^2}{9} \cdot \frac{3}{2w^4} =$ $\frac{4}{3w^2}$

(b) $\frac{27r^5}{7s} \cdot \frac{2rs^3}{9r^3s^2} = \frac{3r^5}{7s} \cdot \frac{2s}{r^2} = \boxed{\frac{6r^3}{7}}$

(c) $x(x+5)^2 \cdot \frac{2}{x^2-25} = \frac{2x(x+5)(x+5)}{(x-5)(x+5)} = \boxed{\frac{2x(x+5)}{x-5}}$

(d) $\frac{6x^2y^2}{(x-2)} \div \frac{3xy^2}{(x-2)^2} = \frac{6x^2y^2}{(x-2)} \cdot \frac{(x-2)^2}{3xy^2} = \boxed{2x(x-2)}$

(e) $\frac{t^2+5t}{t+1} \div (t+5) = \frac{t^2+5t}{t+1} \cdot \frac{1}{t+5} = \frac{(t\blacksquare)(t+5)}{t+1} \cdot \frac{1}{t+5} = \boxed{\frac{t}{t+1}}$

(f) $\frac{2}{25x^2} \cdot \frac{5x}{12} \div \frac{2}{15x} = \frac{2}{25x^2} \cdot \frac{5x}{12} \cdot \frac{15x}{2} = \boxed{\frac{1}{4}}$

(g) $\frac{x^2-4y^2}{x+2y} \div (x+2y) \cdot \frac{2y}{x-2y} = \frac{x^2-4y^2}{x+2y} \cdot \frac{1}{x+2y} \cdot \frac{2y}{x-2y} = \frac{(x-2y)(x+2y)}{(x+2y)(x+2y)} \cdot \frac{2y}{(x-2y)}$

$= \boxed{\frac{2y}{x+2y}}$

2. Add or subtract, as indicated. Start by finding the Least Common Denominator (LCD). Remember to simplify after adding or subtracting.

(a) $\frac{x}{x^2+4x-12} - \frac{6}{x^2+4x-12} = \frac{x-6}{x^2+4x-12}$ LCD: $x^2+4x-12$

$= \frac{x-6}{(x+6)(x-2)}$

(b) $\frac{4}{3p} - \frac{5}{2p^2} = \frac{(2p)4}{(2p)3p} - \frac{(3)5}{(3)(2p^2)} = \frac{8p-15}{6p^2}$ LCD: $6p^2$

(c) $\frac{6}{5a^2b} - \frac{1}{10ab} = \frac{(2)6}{(2)5a^2b} - \frac{(a)1}{(a)10ab} = \frac{12-a}{10a^2b}$ LCD: $10a^2b$

(d) $\frac{x-2}{x-6} - \frac{x+2}{6-x} = \frac{x-2}{x-6} + \frac{x+2}{x-6} = \frac{2x}{x-6}$ LCD: $x-6$

(e) $\frac{5}{9-x^2} - \frac{4}{x^2+4x+3} = \frac{-5}{(x-3)(x+3)} - \frac{4}{(x+1)(x+3)}$ LCD: $(x+1)(x+3)(x-3)$

$= \frac{-5(x+1)-4(x-3)}{(x+1)(x+3)(x-3)} = \frac{-9x+7}{(x+1)(x+3)(x-3)}$

(f) $\frac{x+2}{x^2-36} - \frac{x}{x^2+9x+18} = \frac{x+2}{(x-6)(x+6)} - \frac{x}{(x+6)(x+3)}$ LCD: $(x-6)(x+6)(x+3)$

$= \frac{(x+2)(x+3) - x(x-6)}{(x-6)(x+6)(x+3)} = \frac{11x+6}{(x-6)(x+6)(x+3)}$

(g) $\frac{t+1}{t+3} - \frac{t-2}{t-3} + \frac{6}{t^2-9} = \frac{(t+1)(t-3) - (t-2)(t+3)+6}{(t-3)(t+3)}$ LCD: $(t-3)(t+3)$

$= \frac{-3t+9}{(t-3)(t+3)}$

(h) $w + 2 + \frac{1}{w-2} = \frac{(w+2)(w-2)}{w-2} + \frac{1}{w-2}$ LCD: $w-2$

$= \frac{(w+2)(w-2)+1}{w-2}$