Show work on all your problems. Turn this sheet in when finished and pick up Sheet #2.

Simplify each Rational Expression.

1. $\dfrac{24a^7b^2}{18a^{12}b^8}$

2. $\dfrac{x^3 + 5x^2 - 16x - 80}{x^3 - 4x^2 - 25x + 100}$

3. $\dfrac{6x^5 - 78x^3 + 216x}{4x^4 + 20x^3 + 24x^2}$

Simplify each product or quotient.

4. $\dfrac{8x^3 - 392x}{x^2 - 5x - 14} \cdot \dfrac{x^2 - 4}{12x^3 + 84x^2}$

5. $\dfrac{2x^3 - 8x^2}{x^2 - 8x + 16} \div \dfrac{10x^4 - 30x^3}{x^2 - 9x + 20}$

6. $\dfrac{x^2 - 4}{x^2 + 8x + 12} \div \dfrac{x^2 + x - 2}{3x^2 - 3x} \cdot \dfrac{2x^2 + 12x}{6x^3 - 12x^2}$

Simplify each sum and difference. Show work on all problems. Turn this sheet in when finished and pick up sheet #3.

1. $\dfrac{7}{x+8} + \dfrac{3}{x-2}$

2. $\dfrac{5x}{x^2-9} - \dfrac{2}{x^2+x-12}$

3. $\dfrac{9}{4x^2+12x-40} - \dfrac{11}{3x^2-75}$

4. $\dfrac{3}{x^3+12x^2+36x} + \dfrac{4}{x^4+4x^3-12x^2}$

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5. $\dfrac{3}{x^2+5x+6} + \dfrac{7}{x^2-9} - \dfrac{5}{x^2-x-6}$

Solve each equation. Show your work.

1. $\frac{2x}{7} - 8 = 6$

2. $\frac{5x}{4} + \frac{3}{2} = 10$

3. $\frac{4}{3} - \frac{2x}{9} = \frac{5}{6}$

(hint: one method to solve this equation is to multiply both sides by the LCM of $3, 9, \& 6$. This will eliminate all three denominators)

Solve each rational equation by first cross-multiplying then finish solving for x.

4. $\frac{-6}{x+5} = \frac{2}{x-7}$

5. $\frac{3}{x^2 - 1} = \frac{4}{x^2 + 2x + 4}$

6. $\frac{x-6}{3} = \frac{-3}{x+4}$