Assignment 4.2 – Multiplying and Dividing Rational Expressions

1) Simplify each expression. (Multiply and then cancel if possible). Identify any NPV.

a. $\left(\frac{20y^2}{8x^3}\right)\left(\frac{4x^5}{3y}\right)$

b. $\left(\frac{3x}{5}\right)\left(\frac{10x^5}{20}\right)$

c. $\left[\frac{xy^2}{(x+y)}\right]\left[\frac{(x+y)}{2x}\right]$

d. $\left[\frac{(x-3)}{3x}\right]\left[\frac{15x^2}{(x-3)(x+2)}\right]$

2) Multiply each expression and simply if possible. Identify all NPV.

a. $\left(\frac{x+3}{x}\right)\left(\frac{x^2}{x^2+6x+9}\right)$

b. $\left(\frac{5y+5}{x}\right)\left(\frac{x^2}{y^2+4y+3}\right)$

c. $\left(\frac{10x+20}{2x+8}\right)\left(\frac{x^2-16}{x^2-x-6}\right)$

3) Simplify each expression. (Divide and then cancel if possible). Identify any NPV.

a. $\left(\frac{9x}{3y}\right) \div \left(\frac{12x^2}{4y}\right)$

b. $\left(\frac{x+1}{6x-5}\right) \div \left(\frac{(x+1)(x-1)}{6x-5}\right)$

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

4) Divide each expression and simply if possible. Identify all NPV.

a. $\left(\frac{x^2+4x+4}{x^2-1}\right) \div \left(\frac{2x^2+4x}{x+1}\right)$

b. $\left(\frac{9-m^2}{9m^2-1}\right) \div \left(\frac{m+3}{3m^2-10m+3}\right)$

c. $\left(\frac{a^2+ab}{4a^2-7a-2}\right) \div \left(\frac{3a+3b}{4a^2+9a+2}\right)$

5) Time for a challenge!

a. $\left(\frac{x^2+6x+5}{5x}\right) \times \left(\frac{x^2+4x}{x^2+7x+10}\right) \div \left(\frac{x^2-16}{15x+30}\right)$

b. $\left(\frac{3x^2+x-2}{x^2+7x+12}\right) \div \left(\frac{x^2+5x+4}{20x}\right) \div \left(\frac{30x^2-20x}{x^2+x-12}\right)$