Dividing Rational Expressions

Name _____

Date _____ Period _____

Rational Expression

a fraction of polynomials $\frac{\text{polynomial}}{\text{polynomial}}$

$\frac{2x^2 + 3x + 2}{x^2 - 4x + 6}$ $\frac{x^2 - 4}{2x}$ $\frac{27x^3 + 8}{x^2 - x - 20}$

Rules for dividing rational expressions

Step: 1 Express division problem as multiplying by the reciprocal of second expression.

Step 2: Express polynomials in numerator and denominator in factored form.

Step 3: Cancel common factors in numerator and denominator.

Step 4: Multiply remaining factors.

Divide the following rational expressions

$$\frac{3x^2}{4y^4} \div \frac{3x^4}{2y^2}$$

$$\frac{2x^3}{y^2} \div \frac{3x^5}{2y^5}$$

Divide the following rational expressions

$$\frac{x-2}{x+1} \div \frac{5x-10}{3x+3}$$

$$\frac{x-3}{2x+1} \div \frac{x^2-9}{6x+3}$$

Divide the following rational expressions

$$\frac{2x^2-6x}{x^2-2x-3} \div \frac{x^2-3x-10}{x^2+3x+2}$$

Divide the following rational expressions

$$\frac{x^2-16}{x^2+x-12} \div \frac{x^2-x-2}{x^2-5x+6}$$

Divide the following rational expressions

$$\frac{x^2-6x+8}{9x^2-16} \div \frac{x^2-4}{3x^2+10x+8}$$