

Math 3 Multiplying and Dividing Rational Expressions Worksheet

Multiply or divide each rational expression. Write the answer in simplest form.

$$1. \frac{12x^4y}{5y^2} \cdot \frac{2xy}{3x^2} = \frac{8xy^2}{5y^2} = \left(\frac{8x}{5}\right)$$

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

$$\frac{x(x-2)}{(x+1)(x+1)} \cdot \frac{(x+3)(x+1)}{x(x+3)}$$

$$\left(\frac{x-2}{x+1}\right)$$

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

$$\frac{x^2}{x^2-1} \cdot \frac{x+1}{3x}$$

$$\frac{x^2}{(x+1)(x-1)} \cdot \frac{x+1}{3x} = \left(\frac{x}{3(x-1)}\right)$$

$$4. (x+7) \div \frac{x^2+9x+14}{x^2+5x+6}$$

$$\frac{x+7}{1} \cdot \frac{(x+3)(x+2)}{(x+7)(x+2)}$$

$$x+3$$

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

$$\frac{(x-2)(x-1)}{(x+2)} \cdot \frac{3x}{(x-2)} \cdot \frac{2(x+2)}{5x(x-1)}$$

$$\left(\frac{6}{5}\right)$$

$$6. \frac{2x^3-12x^2}{x^2-4x-12} \div \frac{8x^3+24x^2}{x^2+9x+18}$$

$$\frac{2x^2(x-6)}{(x-6)(x+2)} \cdot \frac{(x+3)(x+6)}{8x^2(x+3)}$$

$$\left(\frac{(x+6)}{4(x+2)}\right)$$

$$7. \frac{x^2-100}{4x^2} \cdot \frac{x^3-5x^2-50x}{x^4+10x^3} \div \frac{(x-10)^2}{5x}$$

$$\frac{(x+10)(x-10)}{4x^2} \cdot \frac{x(x^2-5x-50)}{x^3(x+10)} \cdot \frac{5x}{(x-10)(x-10)}$$

$$\frac{(x+10)(x-10)}{4x^2} \cdot \frac{x(x-10)(x+5)}{x^3(x+10)} \cdot \frac{5x}{(x-10)(x-10)}$$

$$\left(\frac{5(x+5)}{4x}\right)$$

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$$8. \frac{3x^2-12}{5x-10} \cdot \frac{1}{2x+4}$$

$$\frac{3(x^2-4)}{5(x-2)} \cdot \frac{1}{2(x+2)}$$

$$\frac{3(x+2)(x-2)}{5(x-2)} \cdot \frac{1}{2(x+2)}$$

$$\left(\frac{3}{10}\right)$$

(2)