

Math 3 Multiplying and Dividing Rational Expressions Worksheet

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

$$1. \frac{\cancel{4}x^2 \cdot 2xy}{5x^2 \cdot \cancel{2}x^2}$$

$$\frac{0x}{5}$$

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

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

$$\frac{x-2}{x+1}$$

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

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

$$\frac{x}{3(x-1)}$$

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

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

$$x+3$$

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

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

$$\frac{6}{5}$$

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

$$\frac{2\cancel{x}^2(\cancel{x-6})}{(\cancel{x-6})(x+2)} \cdot \frac{(x+6)\cancel{(x+3)}}{4\cancel{8}\cancel{x}^2(x+3)}$$

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

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

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

$$\frac{(\cancel{x-10})(x+5)}{4x^3(\cancel{x-10})} = \frac{5(x+5)}{4x^3}$$

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

$$\frac{3(\cancel{x-2})(x+2)}{10(\cancel{x-2})(x+2)}$$

$$\frac{3}{10}$$