

Algebra 2 - K/H Extension

Find the error(s).

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For #1 and #2 below, identify the error(s) in planning the solution or solving the problem. Then write the correct solution.

#1 What is the product $\frac{x^2-3x+2}{8x-16} \cdot \frac{4}{x^2-1}$? State any restrictions on the variable.

$$\begin{aligned} \frac{x^2-3x+2}{8x-16} \cdot \frac{4}{x^2-1} &= \frac{(x-1)(x-2)}{8(x-2)} \cdot \frac{4}{(x-1)(x+1)} \\ &= \frac{\cancel{(x-1)} \cancel{(x-2)}}{\cancel{8} \cancel{(x-2)}} \cdot \frac{\cancel{4}}{\cancel{(x-1)}(x+1)} \\ &= \frac{1}{x+1} \end{aligned}$$

The product is $\frac{1}{x+1}$ for $x \neq 2$, $x \neq 1$, and $x \neq -1$.

#2 What is the quotient $\frac{9-x^2}{2x^2+5x-3} \div \frac{5x-15}{5x-5}$? State any restrictions on the variable.

$$\begin{aligned} \frac{9-x^2}{2x^2+5x-3} \div \frac{5x-15}{5x-5} &= \frac{(3-x)(3+x)}{(2x-1)(x+3)} \div \frac{5(x-3)}{5(x-1)} \\ &= \frac{(3-x)(3+x)}{(2x-1)(x+3)} \cdot \frac{5(x-1)}{5(x-3)} \\ &= \frac{\cancel{(3-x)} \cancel{(3+x)}}{(2x-1)\cancel{(x+3)}} \cdot \frac{\cancel{5}(x-1)}{\cancel{5}\cancel{(x-3)}} \\ &= \frac{x-1}{2x-1} \end{aligned}$$

The quotient is $\frac{x-1}{2x-1}$ for $x \neq \frac{1}{2}$, $x \neq -3$, $x \neq 1$, and $x \neq 3$.

#3 <https://www.openmiddle.com/dividing-rational-expressions/>

Dividing Rational Expressions

 [openmiddle.com/dividing-rational-expressions/](https://www.openmiddle.com/dividing-rational-expressions/)

Directions: Determine values to place in the missing spots to solve the equation below. You may use integer values:

$$\frac{x^2 + 2x - 8}{x^2 + 9x + 20} \div \frac{x^2 + \boxed{}x + \boxed{}}{x^2 + \boxed{}x + \boxed{}} = \frac{x - 1}{x + 5}$$

Source: Sandra Crawford