Algebra 2 Bellwork Thursday, January 21, 2016

Simplify each product or quotient. State restrictions on the variable.

1. $\dfrac{x^2+8x+16}{6x^3+18x^2-24x} \cdot \dfrac{3x-3}{x^2-16}$

2. $\dfrac{2x^3-10x^2}{x^2-10x+25} \div \dfrac{10x^4-30x^3}{x^2-8x+15}$

3. Simplify. No need to state restrictions on the variable.

$\dfrac{5}{x^2+x-2} - \dfrac{3}{x^2-4}$

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Simplify each product or quotient. State restrictions on the variable.

1. $\dfrac{x^2+8x+16}{6x^3+18x^2-24x} \cdot \dfrac{3x-3}{x^2-16}$

$6x(x^2+3x-4)$

$= \dfrac{(x+4)(x+4)}{6x(x+4)(x-1)} \cdot \dfrac{3(x-1)}{(x+4)(x-4)}$

$= \dfrac{1}{2x(x-4)} \quad x \neq 0, \pm 4, 1$

2. $\dfrac{2x^3-10x^2}{x^2-10x+25} \div \dfrac{10x^4-30x^3}{x^2-8x+15}$

$= \dfrac{2x^2(x-5)}{(x-5)(x-5)} \div \dfrac{10x^3(x-3)}{(x-5)(x-3)}$

$= \dfrac{2x^2(x-5)}{(x-5)(x-5)} \cdot \dfrac{(x-5)(x-3)}{10x^3(x-3)}$

$= \dfrac{1}{5x} \quad x \neq 0, 5, 3$

3. Simplify. No need to state restrictions on the variable.

$\dfrac{5}{x^2+x-2} - \dfrac{3}{x^2-4}$ LCD $= (x+2)(x-2)(x-1)$

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

$\dfrac{5(x-2) - 3(x-1)}{(x-2)(x+2)(x-1)} = \dfrac{5x-10-3x+3}{(x-2)(x+2)(x-1)} = \dfrac{2x-7}{(x-2)(x+2)(x-1)}$