Integrated Algebra and Geometry Honors **Name:** Klotz Key

10.1 HW

Simplify each expression and determine the values for which the expressions are defined.

1. $\dfrac{21x^3}{14x^2y^2}$

$\dfrac{3x}{2y^2}$, $x \neq 0; y \neq 0$

2. $\dfrac{(x^6)^3}{(x^3)4}$

$\dfrac{x^{18}}{4x^3}$

$\dfrac{x^{15}}{4}$, $x \neq 0$

3. $\dfrac{3a^2-24a}{3a^2+12a}$

$\dfrac{\cancel{3a}(a-8)}{\cancel{3a}(a+4)}$

$\dfrac{a-8}{a+4}$, $a \neq 0, a \neq -4$

4. $\dfrac{x^2-9}{(x-3)(x+1)}$

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

$\dfrac{(x+3)}{(x+1)}$, $x \neq 3, x \neq -1$

5. $\dfrac{\cancel{8}^{2}\cancel{y^2}\cancel{(y^6)^3}\,\cancel{y^{18}}}{\cancel{4}\cancel{y^{24}}\,\cancel{y^{22}}\,y^4}$

$\dfrac{2}{y^4}$, $y \neq 0$

6. $\dfrac{8-4y}{4y} \cdot \dfrac{16y^5}{y-2}$

$\dfrac{\cancel{4}(2-y)}{\cancel{4y}} \cdot \dfrac{16y^{\cancel{5}}\,y^4}{y-2}$

$\to -1\cancel{(-2+y)} \cdot \dfrac{16y^4}{\cancel{y-2}}$

$-16y^4$ $y \neq 0, y \neq 2$

7. $\dfrac{z^2+5z}{7z} \div \dfrac{z^2-25}{14z^3}$

$\dfrac{\cancel{z}\cancel{(z+5)}}{\cancel{7z}} \cdot \dfrac{\cancel{14}^{2}z^3}{\cancel{(z+5)}(z-5)}$

$\dfrac{2z^3}{z-5}$, $z \neq 0, 5, -5$

8. $\dfrac{x^2-5x+4}{2x-2} \div (3x^2-12x)$

$\dfrac{\cancel{(x-1)}\cancel{(x-4)}}{2\cancel{(x-1)}} \cdot \dfrac{1}{3x\cancel{(x-4)}}$

$\dfrac{1}{6x}$, $x \neq 0, 1, 4$