

Simplifying Rational Expressions

Simplifying rational expressions

1. Factor the numerator and denominator
2. Cancel like terms or binomials

$$\frac{2-x}{x} \quad \frac{x(x-2)}{x(x-2)} = x$$

$$\frac{n^2 + 4n - 60}{n + 10}$$

add multiply

$$\frac{(n+10)(n-6)}{n+10}$$

$$= \frac{n-6}{n \neq -10}$$

excluded value

$$\frac{b-6}{10b^2 - 60b} = \frac{\cancel{b-6} 1}{10b(\cancel{b-6})}$$

$$= \frac{1}{10b} \quad b \neq 0, 6$$

$$\frac{56a^2}{49a^2 - 21a} = \frac{\cancel{7a}(8a)}{\cancel{7a}(7a-3)}$$

$7a=0$
 $a=0$
 $7a-3=0$
 $+3+3$
 $\frac{7a=3}{7 \quad 7}$
 $a=3/7$

$$= \frac{8a}{7a-3} \quad a \neq 0, 3/7$$

$$\frac{n^2 + 5n + 4}{n + 1} = \frac{(n+1)(n+4)}{n+1}$$

$$= \frac{n+4}{n \neq -1}$$

$$\frac{x^2 - 11x + 10}{3x - 30} = \frac{(x-1)\cancel{(x-10)}}{3\cancel{(x-10)}}$$

$$\boxed{= \frac{x-1}{3}}$$

$x \neq 10$

$$\frac{x^2 + 6x - 40}{x^2 - 100} = \frac{\cancel{(x+10)}(x-4)}{(x-10)\cancel{(x+10)}}$$

$$\boxed{= \frac{x-4}{x-10}}$$

$x \neq 10, -10$

$$\frac{5m^3 - 50m^2}{m^2 - 12m + 20} = \frac{5m^2\cancel{(m-10)}}{\cancel{(m-10)}(m-2)}$$

$$\boxed{= \frac{5m^2}{m-2}}$$

$m \neq 2, 10$