

Practice Rational Functions

[- + ÷ x]

Simplify and state any restrictions on the variable

① $\frac{2x}{4x^2-2x} \rightarrow \frac{\cancel{2x}}{2x(2x-1)} \rightarrow \frac{1}{2x-1}$ but $x \neq 0$
 $x \neq \frac{1}{2}$

$42x=0$
 $x=0$
 $2x-1=0$
 $2x=1$
 $x=\frac{1}{2}$

② $\frac{z^2-49}{z+7} \rightarrow \frac{(z+7)(z-7)}{\cancel{z+7}} \rightarrow z-7$ but $z \neq -7$

③ $\frac{2x+10}{x^2+10x+25} \rightarrow \frac{2(x+5)}{(x+5)(x+5)} \rightarrow \frac{2}{x+5}$ $x \neq -5$

HINT: FACTOR ASAP

Multiply. (You don't need to state restrictions)

④ $\frac{4n^2}{5n} \cdot \frac{7n}{3n^2} \rightarrow \frac{7}{15n^2}$

⑤ $\frac{2x+12}{3x-9} \cdot \frac{2x-6}{3x+8} \rightarrow \frac{2(x+6)}{3(x-3)} \cdot \frac{2(x-3)}{3x+8} \rightarrow \frac{4(x+6)}{3(3x+8)}$ or $\frac{4x+24}{9x+24}$

Divide

⑥ $\frac{6x+6y}{x-y} \div \frac{18}{5x-5y}$

$\frac{\cancel{6}(x+y)}{\cancel{x-y}} \cdot \frac{5(x-y)}{\cancel{18}3} \rightarrow \frac{15(x+y)}{3}$ or $\frac{5x+5y}{3}$

$$\textcircled{7} \quad \frac{2n(4n)}{5(4n)} + \frac{3(10)}{2n(10)} - \frac{n(5n)}{4(5n)} \rightarrow \frac{8n^2 + 30 - 5n^2}{20n}$$

$$\downarrow$$

$$\frac{3n^2 + 30}{20n} \rightarrow 3$$

$$\textcircled{8} \quad \frac{3(x)}{4x(x)} - \frac{(4)2}{(4)x^2} \rightarrow \frac{3x - 8}{4x^2}$$

$$\textcircled{9} \quad \frac{2m^2 + m}{(2m+1)^2} - \frac{3(2m+1)}{2m+1(2m+1)} \rightarrow \frac{2m^2 + m - [6m+3]}{(2m+1)(m+1)}$$

$$\downarrow$$

$$\frac{2m^2 + m - 6m - 3}{(2m+1)(m+1)}$$

$$\leftarrow \frac{2m^2 - 5m - 3}{(2m+1)(2m+1)}$$

FACTOR!

$$\textcircled{10} \quad \frac{6x-4}{3x^2-17x+10} - \frac{1}{x^2-2x-15}$$

$$\downarrow$$

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

$$\downarrow$$

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

$$\downarrow$$

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

$$\downarrow$$

$$\frac{2x+4-1}{(x-5)(x+2)}$$

$$\downarrow$$

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

Hint: FACTOR ASAP