

12-4 MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS

The easy stuff first ...

$$\frac{3}{x^1} \cdot \frac{4}{x^2} = \frac{12}{x^3}$$

$$\frac{x}{(x+4)} \cdot \frac{(x-3)}{(x-2)} = \frac{x^2-3x}{x^2+2x-8}$$

You
try!

$$\frac{3x}{x-5} \cdot \frac{2x^3}{x-7} = \frac{6x^4}{x^2+12x+35}$$

LOOK FOR REDUCING TO MAKE IT EASIER:

$$\frac{2x+1}{3} \cdot \frac{6x}{4x^2-1} = \frac{\cancel{2x+1}}{\cancel{3}} \cdot \frac{\cancel{6}^2 x}{\cancel{2x+1}(2x-1)}$$

You
try...

$$\frac{2x}{2x-1}$$

$$\frac{(x-2)}{8x} \cdot \frac{(8x-16)}{(x^2-4)} = \frac{(x-2)}{\cancel{8}x} \cdot \frac{\cancel{8}(x-2)}{(x+2)\cancel{(x-2)}}$$

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

YIKES!

MULTIPLY

$$\frac{3s+2}{2s+4}$$

BY

$$\frac{s^2+5s+6}{1}$$

$$\frac{3s+2}{2(\cancel{s+2})} \cdot \frac{(\cancel{s+2})(s+3)}{1}$$

$$\frac{(3s+2)(s+3)}{2}$$

You try:

MULTIPLY

$$v^2 - 2v - 15$$

By

$$\frac{2v}{v+3}$$

$$= \frac{(v-5)\cancel{(v+3)}}{1} \cdot \frac{2v}{\cancel{(v+3)}}$$

$$= 2v(v-5)$$

DIVISION IS NOT ANY HARDER!
ASK ME, "WHY?"

JUST INVERT AND MULTIPLY
NEVER MIND THE REASON WHY...

DIVIDE $\frac{a^2 + 7a + 10}{a - 6}$ BY $\frac{a + 5}{a^2 - 36}$.

$$= \frac{\cancel{(a+5)}(a+2)}{\cancel{(a-6)}} \cdot \frac{\cancel{(a-6)}(a+6)}{\cancel{(a+5)}}$$

$$= (a+2)(a+6)$$

LAST ONE :

$$\frac{x^2 + 3x + 2}{4x} \div (5x^2 + 5x)$$

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

$$\frac{x+2}{20x^2}$$