

OBJECTIVE 3: Multiplying & Dividing Rational functions

- If division, KCF
- Now you should have a multiplication problem
- GCF and factor everything possible
- Rewrite your problem as one fraction (straight across)
- Simplify/Cancel anything that matches on top and bottom (one for one)

$$\frac{10}{-10} \cdot \frac{-11}{-11} = \frac{2x^2 - 10x + 5}{(2x-1)(x-5)} \cdot \frac{10}{2(2x-1)}$$

TASK 1: Divide, and write your answer in simplest form.

a) $\frac{2x^2 - 11x + 5}{5x - 25} \div \frac{4x - 2}{10}$

$$\frac{(2x-1)(x-5)}{5(x-5)} \cdot \frac{10}{2(2x-1)} = \boxed{1}$$

$$\frac{3x^2 - 12x + 4}{3x(x-4) + 1} \div \frac{9x+3}{6}$$

$$\frac{-12}{-12} \cdot \frac{+1}{-11}$$

$$\frac{(3x+1)(x-4)}{2(x-4)} \div \frac{3(3x+1)}{6}$$

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

TASK 2: Multiply or Divide as indicated. Leave answer in simplest form.

a) $\frac{x-4}{5} \cdot \frac{x}{x-4}$

$\frac{\cancel{x(x-4)}}{5(x-4)}$

$\boxed{\frac{x}{5}}$

b) $\frac{x-4}{5} \div \frac{x}{x-4}$

$\frac{x-4}{5} \cdot \frac{x-4}{x}$

$\boxed{\frac{(x-4)^2}{5x}}$

c) $\frac{x^2-4}{2x+6} \cdot \frac{x^2+4x+3}{2-x}$

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

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

d) $\frac{y+9}{8x} \cdot \frac{y+9}{2x}$

$\boxed{\frac{(y+9)^2}{16x^2}}$

b) $\frac{y+9}{8x} \div \frac{y+9}{2}$

$\frac{y+9}{8x} \cdot \frac{2}{y+9} = \boxed{\frac{1}{4x}}$

c) $\frac{35x-7x^2}{x^2-25} \cdot \frac{x^2+3x-10}{x^2+4x}$

$\frac{-7x^2+35x}{x^2-25} \cdot \frac{x^2+3x-10}{x^2+4x}$

$\frac{-7x(x-5)}{(x+5)(x-5)} \cdot \frac{(x+5)(x-2)}{x(x+4)}$

$\boxed{\frac{-7(x-2)}{(x+4)}}$

Common Mistakes:

Still need help with: