

OBJECTIVE 1: Multiplying Rational Expressions

- GCF FIRST!
- Factor numerator & denominator
- You always multiply straight across.
- Then simplify common factors.

TASK 1: Multiply. Leave your answer in simplest form.

a) $\frac{25x}{2} \cdot \frac{1}{y^3} \rightarrow \frac{25x(1)}{2(y^3)} = \boxed{\frac{25x}{2y^3}}$
 $y \neq 0$

$(-\infty, 0) \cup (0, \infty)$

b) $\frac{-4x^2}{5y} \cdot \frac{3y^5}{14x^2} = \frac{-12x^2y^5}{70x^2y} = \boxed{\frac{-6y^4}{35}}$

TASK 2: Multiply. Leave your answer in simplest form.

a) $\frac{x^2+x}{3x} \cdot \frac{6}{5x+5} \rightarrow \frac{x(x+1)}{3x} \cdot \frac{6}{5(x+1)} = \boxed{\frac{2}{5}}$
 $x \neq 0, -1$

D: $(-\infty, -1) \cup (-1, 0) \cup (0, \infty)$

$x \neq 0, \pm 1$

b) $\frac{x^2-x}{5x} \cdot \frac{15}{x^2-1} \rightarrow \frac{x(x-1)}{5x} \cdot \frac{15}{x(x-1)} = \boxed{\frac{3}{x+1}}$

D: $(-\infty, -1) \cup (-1, 0) \cup (0, 1) \cup (1, \infty)$

TASK 3: Multiply. Leave your answer in simplest form.

a) $\frac{3x+3}{5x-5x^2} \cdot \frac{2x^2+x-3}{4x^2-9}$

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

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

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

$x \neq 0, 1, \pm \frac{3}{2}$

b) $\frac{6-3x}{6x^2-6x} \cdot \frac{3x^2-2x-5}{x^2-4}$

$\frac{-3x+6}{6x(x-1)} \cdot \frac{3x^2-2x-5}{(x+2)(x-2)}$

$\frac{1-\cancel{3}(x-2)}{-2\cancel{6}x(x+1)} \cdot \frac{(3x-5)(x+1)}{(x+2)(x-2)}$

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

$x \neq 0, -1, \pm 2$

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

$\frac{a \cdot c}{b \cdot b} = \frac{3 \cdot 5}{-15} = -1$

$\frac{a \cdot c}{b \cdot b} = \frac{1 \cdot 4}{-4} = -1$

$D: (-\infty, -\frac{5}{2}) \cup (-\frac{3}{2}, 0) \cup (0, 1) \cup (1, \frac{3}{2}) \cup (\frac{3}{2}, 2) \cup (2, 3) \cup (3, \infty)$

Common Mistakes:

All or nothing!

Still need help with: