Warm up

Multiply

① $\frac{3x^2}{4x} \cdot \frac{5x}{6} = \frac{15x^3}{24x^1} = \frac{5x^2}{8}$

② $\frac{2x}{5x^5} \cdot \frac{4x}{2x^6} = \frac{8x^2}{10x^{11}} = \frac{4}{5x^9}$

③ $\frac{x^2+9x+18}{x^2-4} \cdot \frac{x-2}{x^2+6x}$

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

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

Notes #3 Divide Rational Expressions

When you divide by a fraction, you are actually multiplying by the reciprocal FLIP

$4 \div \frac{1}{2}$

$\frac{1}{2}$ $\frac{3}{4}$ $\frac{5}{6}$ $\frac{7}{8}$

$4 \cdot \frac{2}{1} = 8$

So – we are going to KEEP CHANGE FLIP

① $\frac{x^2-x-12}{3x-9} \div \frac{x-4}{12}$ FACTOR EVERYTHING

$\frac{(x+3)(x-4)}{3(x-3)} \cdot \frac{12}{x-4}$ find matches top bottom

KEEP Change (÷ to ·) FLIP

$\frac{12(x+3)}{3(x-3)} = \frac{4(x+3)}{(x-3)}$ answer

② $\frac{2x-12}{x^2-7x+6} \div \frac{x^2-1}{3x-3}$ Factor first. flip and factor

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

Keep Change (÷ → ·)

$\frac{6}{(x-1)(x+1)}$

try these:

③ $\frac{x^2+9x+20}{6} \div \frac{8x+40}{6x-12}$

$\frac{(x+5)(x+4)}{6} \cdot \frac{6(x-2)}{8(x+5)}$ $\boxed{\frac{(x+4)(x-2)}{8}}$

④ $\frac{x^2-4}{x^2-x-6} \div \frac{2x-4}{3x-9}$

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