Warm-up

① $\dfrac{4x^8}{8x^{12}}$

② $\dfrac{12x^2+4x-1}{36x^2-12x+1} \cdot \dfrac{x^2-64}{2x^2+17x+8}$

① $\dfrac{{}^{1}\cancel{4}x^{\cancel{8}}}{{}_{2}\cancel{8}x^{\cancel{12}\,4}}$

$\boxed{\dfrac{1}{2x^4}}$

② $\dfrac{\cancel{(6x-1)}\cancel{(2x+1)}}{\cancel{12x^2+4x-1}} \cdot \dfrac{(x-8)\cancel{(x+8)}}{\cancel{x^2-64}} = \boxed{\dfrac{x-8}{6x-1}}$

$\dfrac{\cancel{36x^2-12x+1}}{\cancel{(6x-1)}(6x+1)} \quad \dfrac{\cancel{2x^2+17x+8}}{\cancel{(2x+1)}\cancel{(x+8)}}$

◎ I can determine the undefined values of a rational expression.

$\frac{\text{num}}{\text{denom}}$ $\longrightarrow$ any #

denom $\longrightarrow$ any # except value of zero

$\frac{0}{6} = 0$ $\quad \frac{0}{8} = 0$ $\quad \boxed{\frac{0}{\#} = 0}$

$\frac{6}{0} = \text{und}$ $\quad \frac{8}{0} = \text{und}$ $\quad \boxed{\frac{\#}{0} = \text{undefined} \quad \frac{0}{0}}$

Warm up

original in factored form	answer	undefined values
① $\frac{4x^8}{12x^{12}}$	$\frac{2}{x^4}$	for $x \neq 0$
② $\frac{(6x-1)(2x+1)(x-8)(x+8)}{(6x-1)(6x-1)(2x+1)(x+8)}$	$\frac{x-8}{6x-1}$	for $x \neq -8, -\frac{1}{2}, \frac{1}{6}$

$6x-1=0$ $\quad 2x+1=0$ $\quad x+8=0$

$6x=1$ $\quad 2x=-1$ $\quad -8 \; -8$

$x=1/6$ $\quad x=-\frac{1}{2}$ $\quad x=-8$

◎ I can divide rational functions

DIVIDE FRACTIONS

$$\frac{3}{4} \div \frac{6}{7} = \frac{3}{4} \cdot \frac{7}{6} = \frac{\cancel{3}^{1}}{4} \cdot \frac{7}{\cancel{6}_{2}} = \boxed{\frac{7}{8}}$$

$$\frac{\frac{2}{3}}{\frac{6}{5}} = \frac{2}{3} \cdot \frac{5}{6} = \frac{\cancel{2}}{3} \cdot \frac{5}{\cancel{6}_{3}} = \boxed{\frac{5}{9}}$$

$$\frac{\frac{3}{4}}{2} = \frac{\frac{3}{4}}{\frac{2}{1}} = \frac{3}{4} \cdot \frac{1}{2} = \boxed{\frac{3}{8}}$$

$\boxed{\text{Keep}}$ 1st fraction $\boxed{\Delta}$ to $\cdot$ $\boxed{\text{flip}}$ 2nd Fraction

Ex 1]

$$\frac{2x^2-10x}{x^2-4} \div \frac{x^2-5x}{x^2-4x-12}$$

keep $\quad$ Δ to $\cdot$ $\quad$ flip

$$\frac{2x^2-10x}{x^2-4} \cdot \frac{x^2-4x-12}{x^2-5x}$$

$$\frac{\cancel{2x^2-10x}}{\cancel{x^2-4}} \cdot \frac{\cancel{x^2-4x-12}}{x^2-5x}$$

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

$$\boxed{\frac{2(x-6)}{x-2} \quad \text{for } x \neq -2, 2, 0, 5}$$