6.2 x/÷ Rational Expressions

Warm-up: ① $\frac{5}{3} \times \frac{2}{15} = \frac{10^{:5}}{45_{:5}} = \frac{2}{9}$

② $\frac{4}{5} \div \frac{2}{3} = \frac{4}{5} \times \frac{3}{2} = \frac{12^{:2}}{10_{:2}} = \frac{6}{5}$

ex) $\frac{d}{2\pi r} \times \frac{2\pi rh}{(d-2)} = \frac{2\pi rhd}{2\pi r(d-2)} = \frac{hd}{d-2}$ $d \neq 2$, $r \neq 0$

ex) $\frac{(y^2-9)}{r^3-r} \times \frac{(r^2-r)}{y+3} = \frac{(y-3)(y+3) \times r(r-1)}{r(r-1)(r+1) \times (y+3)} = \frac{y-3}{r+1}$

$r^3-r = r(r^2-1)$

$r \neq 0, \pm 1$ $y \neq -3$

ex) $\frac{c^2-6c-7}{c^2-49} \div \frac{c^2+8c+7}{c^2+7c} = \frac{(c-7)(c+1) \times c(c+7)}{(c-7)(c+7) \times (c+1)(c+7)}$

$c \neq \pm 7, -1, 0$ $= \frac{c}{(c+7)}$

ex) $\frac{\frac{x^2-4}{x^2-4x}}{\frac{x^2+x-6}{x^2+x-20}} \rightarrow \frac{(x+2)(x-2)}{x(x-4)} \cdot \frac{(x-4)(x+5)}{(x-2)(x+3)} = \frac{(x+2)(x+5)}{x(x+3)}$

$x \neq 0, 4, 2, -3, -5$

ex) $\frac{3x+12}{3x^2-5x-12} \div \frac{12}{3x+4} \times \frac{2x-6}{x+4}$

$= \frac{3(x+4)}{(x-3)(3x+4)} \cdot \frac{(3x+4)}{12} \cdot \frac{2(x-3)}{(x+4)}$ $x \neq 3, -4, -\frac{4}{3}$

$3x+4 \neq 0$

$x \neq -\frac{4}{3}$

$= \frac{1}{2}$

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#1-9 (choose a few)

#11, 13, 17-19, 22, 23