

WARMUP

Multiply each of the fractions:

$$1) \frac{\cancel{5}^1}{\cancel{2}_1} \cdot \frac{\cancel{8}^4}{\cancel{15}_3} = \frac{4}{3}$$

$$4) \frac{x+3}{\cancel{x-2}_1} \cdot \frac{\cancel{x-2}^1}{x+7} = \frac{x+3}{x+7}$$

$$2) \frac{\cancel{3}^1}{\cancel{13}_1} \cdot \frac{\cancel{52}^4}{\cancel{9}_3} = \frac{4}{3}$$

$$5) \frac{x^2-49}{1} \cdot \frac{1}{x-7}$$

$$3) \frac{4}{3} \cdot \frac{7}{11} = \frac{28}{33}$$

$$\frac{(x+7)(\cancel{x-7})}{1} \cdot \frac{1}{\cancel{x-7}} = \frac{x+7}{1} = x+7$$

65 p469

$$\frac{4x-6}{3-2x} = \frac{2(2x-3)}{\cancel{3-2x}^{-1}} = -2$$

50 p469

$$\frac{\overbrace{x^3+4x^2} \quad \overbrace{-3x-12}}{x+4}$$

$$\begin{array}{r} -4 \overline{) 1 \ 4 \ -3 \ -12} \\ \underline{-4 \quad 0 \quad 12} \\ 1 \quad 0 \quad -3 \quad \underline{12} \\ \phantom{1} \quad \phantom{0} \quad \phantom{-3} \quad \phantom{12} \end{array}$$

$$\frac{x^2(x+4) - 3(x+4)}{x+4}$$

$$\frac{\cancel{(x+4)}(x^2-3)}{\cancel{x+4}}$$

$$\frac{\cancel{(x^2-3)}(\cancel{x+4})}{\cancel{x+4}} = x^2-3$$

$$\underline{30 \text{ p469}} \quad \frac{-21}{7x-14} = \frac{\cancel{7}(-3)}{\cancel{7}(x-2)} = \frac{-3}{x-2}$$

## Section 7.2 Multiplying and Dividing Rational Expressions

### Multiplying

- 1) Factor all numerators and denominators completely
- 2) Cancel common factors
- 3) Multiply what remains

$$\underline{\text{ex:}} \quad \frac{7}{x+3} \cdot \frac{x-2}{5} = \frac{7(x-2)}{5(x+3)}$$

$$\underline{\text{ex:}} \quad \frac{x+4}{x-7} \cdot \frac{3x-21}{8x+32} = \frac{\cancel{x+4}}{\cancel{x-7}} \cdot \frac{3(\cancel{x-7})}{8(\cancel{x+4})} = \frac{3}{8}$$

$$\underline{\text{ex:}} \quad \frac{x-3}{x+5} \cdot \frac{10x+50}{7x-21} = \frac{\cancel{x-3}}{\cancel{x+5}} \cdot \frac{10(\cancel{x+5})}{7(\cancel{x-3})} = \frac{10}{7}$$

$$\underline{\text{ex:}} \quad \frac{x-5}{x-2} \cdot \frac{x^2-4}{9x-45} = \frac{\cancel{x-5}}{\cancel{x-2}} \cdot \frac{(x+2)(\cancel{x-2})}{9(\cancel{x-5})} = \frac{x+2}{9}$$

$$\underline{\text{ex:}} \quad \frac{x^2-1}{3x-21} \cdot \frac{x-7}{x-1} = \frac{(x+1)(\cancel{x-1})}{3(\cancel{x-1})} \cdot \frac{\cancel{x-7}}{\cancel{x-1}} = \frac{x+1}{3}$$

$$A^2 - B^2 = (A+B)(A-B)$$

$$\text{ex: } \frac{4x+8}{6x-3x^2} \cdot \frac{3x^2-4x-4}{9x^2-4} = \frac{4(x+2)}{3x(2-x)} \cdot \frac{\overset{-1}{(x-2)}(3x+2)}{(3x+2)(3x-2)}$$

$$= \frac{-4(x+2)}{3x(3x-2)}$$

$$\begin{array}{ccc} & -12 & \\ -6 & \times & 2 \\ & -4 & \end{array}$$

	x	-2
3x	3x <sup>2</sup>	-6x
2	2x	-4

$$\frac{b-a}{a-b} = -1$$

p477 1-31 odd