

Last day's Work: **READ pp.108-112**

pp. 112-114 #(1-7)ace, 10 [16, 17]

Work Ahead: p. 132 #1, 4ac, 6cfg, 7, 8, 9ab

p. 112

6. State the domain of each function. Explain how you found each answer.

a)  $f(x) = \frac{2+x}{x}$

d)  $f(x) = \frac{1}{x^2-1}$

Restriction:  $x \neq 0$

$D_{f(x)} = \{x \in \mathbb{R} \mid x \neq 0\}$

Monday's Work: **READ pp.105-106**

Factoring WS #(3,4)def, 6acd, 9, 10, 11gijo, 12bg [13]

Work Ahead: p. 132 #1, 4ac, 6cfg, 7

9. Factor.

- a)  $32x^2 - 20x + 3$       b)  $24s^2 - 13s - 2$       c)  $4a^2 + 19a + 21$   
 d)  $4x^2 + 21xy - 18y^2$       e)  $10a^2 - 19ab - 15b^2$       f)  $21x^2 + 25xy - 4y^2$

10. Factor.

- a)  $21x^2 + 17x - 30$       b)  $72x^2 + 11x - 6$       c)  $15x^2 - 28x - 32$   
 d)  $48x^2 - 22xy - 15y^2$       e)  $24c^2 + 26cd - 15d^2$       f)  $40y^2 + yz - 6z^2$

11. Factor.

- a)  $8m^2 - 72$       b)  $6x^2 - 150$       c)  $20x^2 - 5y^2$       d)  $18b^2 - 128$   
 e)  $12a^2 - 75$       f)  $18p^2 - 98$       g)  $80s^2 - 405$       h)  $12p^2 - 363$   
 i)  $12x^3 - 27x$       j)  $32m^3 - 98m$       k)  $63a^2b - 28b$       l)  $75s^2t^2 - 27t^2$   
 m)  $(x - y)^2 - z^2$       n)  $(2a + b)^2 - 81$       o)  $81a^2 - (3a + b)^2$       p)  $4(2x - y)^2 - 25z^2$

12. Factor.

- a)  $(x + 2)^2 - (x + 7)^2$       b)  $(5m - 2)^2 - (3m - 4)^2$       c)  $(2a + 3)^2 - (2a - 3)^2$   
 d)  $(3y + 8z)^2 - (3y - 8z)^2$       e)  $(3p - 7)^2 - (8p + 2)^2$       f)  $(2x - 1)^2 - (7x + 4)^2$   
 g)  $x^4 - 13x^2 + 36$       h)  $a^4 - 17a^2 + 16$       i)  $y^4 - 5y^2 + 36$

13. Factor, if possible.

- a)  $8d^2 - 32e^2$       b)  $25m^2 - \frac{1}{4}n^2$       c)  $18x^2y^2 - 50y^4$       d)  $10a^2 - 7b^2$   
 e)  $25s^2 + 49t^2$       f)  $p^2 - \frac{1}{9}q^2$       g)  $5x^4 - 80$       h)  $\frac{x^2}{16} - \frac{y^2}{49}$

$$\begin{aligned} (13h) \quad & \frac{x^2}{16} - \frac{y^2}{49} \\ & = \left(\frac{x}{4} + \frac{y}{7}\right)\left(\frac{x}{4} - \frac{y}{7}\right) \\ & \Rightarrow \left(\frac{1}{16}x^2 - \frac{1}{49}y^2\right) \end{aligned}$$

$$\begin{aligned} (11p) \quad & 4(2x - y)^2 - 25z^2 \\ & \text{let } w = 2x - y \\ & 4w^2 - 25z^2 \\ & = (2w + 5z)(2w - 5z) \\ & = (2(2x - y) + 5z)(2(2x - y) - 5z) \\ & = (4x - 2y + 5z)(4x - 2y - 5z) \end{aligned}$$

6. Factor.

- a)  $(x + y)^2 + 9(x + y) - 10$   
 c)  $(3y - 4)^2 - 2(3y - 4) - 63$

$$\begin{aligned} & \text{let } w = 3y - 4 \\ & w^2 - 2w - 63 \\ & = (w - 9)(w + 7) \\ & = (3y - 4 - 9)(3y - 4 + 7) \\ & = (3y - 13)(3y + 3) \\ & = (3y - 3)(3)(y + 1) \\ & = 3(3y - 13)(y + 1) \end{aligned}$$

$$\begin{aligned} (11j) \quad & 32m^3 - 98m \\ & = 2m(16m^2 - 49) \\ & = 2m(4m - 7)(4m + 7) \end{aligned}$$

## Today's Learning Goal(s):

Date: Feb. 14/19  
(Every lesson)

By the end of the class, I will be able to:

- a) multiply or divide two rational expressions and state the restrictions.

## 2.6 Multiplying and Dividing Rational Expressions

Ex. 1 Simplify. State any restrictions on the variables.

$$a) \frac{8^1}{15^3} \times \frac{25^5}{16^2}$$

$$= \frac{5}{6}$$

$$b) \frac{312x^2}{5y^3} \times \frac{15y}{8x}$$

$$= \frac{9}{2} x^{2-1} y^{1-3}$$

$$= \frac{9}{2} x^1 y^{-2}$$

$$= \frac{9}{2} x \left(\frac{1}{y}\right)^2$$

$$= \frac{9}{2} x \left(\frac{1}{y^2}\right)$$

$$= \frac{9}{2} x \cdot \frac{1}{y^2}$$

$$= \frac{9x}{2y^2}$$

Restrictions:  $x \neq 0, y \neq 0$

$$c) \frac{4x+8}{5x^3} \div \frac{6x+12}{25x}$$

$$= \frac{4x+8}{5x^3} \times \frac{25x}{6x+12}$$

$$= \frac{\cancel{4}(x+2)}{\cancel{5}x^{\cancel{3}}x^2} \times \frac{\cancel{25}x^{\cancel{5}}}{\cancel{6}(x+2)}$$

$$= \frac{10}{3x^2}$$

Rest:  $x \neq 0, -2$

$$6x+12 \neq 0$$

$$6x \neq -12$$

$$x \neq \frac{-12}{6}$$

$$x \neq -2$$

Simplify. State any restrictions on the variables.

$$d) \frac{x^2 - x - 12}{2x^2 - 9x + 4} \div \frac{5x^2 - 45}{2x^2 + 11x - 6}$$

$$\begin{array}{l} 16 \\ 23 \end{array}$$

$$= \frac{(x-4)(x+3)}{(2x-1)(x-4)} \div \frac{5(x^2-9)}{(2x-1)(x+6)}$$

$$= \frac{\cancel{(x-4)}(x+3)}{\cancel{(2x-1)}\cancel{(x-4)}} \times \frac{\cancel{(2x-1)}(x+6)}{5(x-3)\cancel{(x+3)}}$$

$$= \frac{x+6}{5(x-3)}$$

$$R: x \neq \frac{1}{2}, 4, -6, 3, -3$$

$$\hookrightarrow 2x - 1 \neq 0$$

$$2x \neq 1$$

$$x \neq \frac{1}{2}$$

Are there any Homework Questions you would like to see on the board?

Last day's work: pp. 112-114 #(1 – 7)ace, 10 [16, 17]

Today's Homework Practice includes:

**READ pp.117-121**

pp. 122-123 #(4 – 7)ac, 8, 9, 11 [13]

Work Ahead: p. 132 #1, 4ac, 6cfg, 7, 8, 9ab

Note for p.132 the textbook is **incorrect for** 8a, 8e, and 13c

The correct answers are:

$$8a) 2x^2y(y^3 - 3x^3y^2 + 4x)$$

$$8e) (a-2)(a+2)(a^2+4)$$

$$13c) \frac{x(x-1)}{y(y+1)}$$