

3. Simplify $\frac{x^2 - 4}{x^2 - 2x - 8}$

$$\frac{x-4}{x+4}$$

4. Simplify $\frac{x-4}{4-x}$

$$\frac{7-4}{4-7} = \frac{3}{-3} = -1$$

$$\frac{-1(-x+4)}{4-x} = -1$$

Example 3

1. Simplify $\frac{\overset{-1}{(3-4x)}(x-7)}{(x+5)(\cancel{4x-3})}$

$$= -\frac{(x-7)}{(x+5)}$$

$$-\frac{(x-7)}{(x+5)} = \frac{x-7}{-x-5}$$

Simplify $\frac{9a-3}{3a^2+11a-4}$

$$\begin{aligned} &\overset{-12}{3a^2+11a-4} \\ &3a^2+12a-a-4 \\ &3a(a+4)-1(a+4) \\ &\frac{(a+4)(3a-1)}{3(3a-1)(a+4)} \\ &= \frac{3}{a+4} \end{aligned}$$

2. Simplify $\frac{14-7x}{x^3-2x^2}$

$$\frac{\overset{-1}{7}(2-x)}{x^2(\cancel{x-2})}$$

$$= \frac{-7}{x^2}$$

Simplify $\frac{x^2+8x+7}{x^2-4x-5}$

$$\frac{(x+7)(\cancel{x+1})}{(x-5)(\cancel{x+1})}$$

$$= \frac{x+7}{x-5}$$

Simplify $\frac{10 + 3x - x^2}{x^2 + 6x + 8}$

$$\begin{aligned}
 & -x^2 + 3x + 10 \\
 & -1(x^2 - 3x - 10) \\
 & -1(x-5)(x+2)
 \end{aligned}$$

$$\frac{-\cancel{(x-5)}\cancel{(x+2)}}{(x+4)(x+2)}$$

$$\frac{-x+5}{x+4}$$

Simplify $\frac{9 - x^2}{x^2 + x - 12}$

$$\frac{-1\cancel{(3-x)}(3+x)}{(x+4)\cancel{(x-3)}}$$

$$\frac{-1(3+x)}{x+4}$$

Simplify $\frac{a^2 + 2a - 24}{16 - a^2}$

$$\frac{(a+6)\cancel{(a-4)}}{\cancel{(4-a)}(4+a)}$$

$$\frac{-1(a+6)}{4+a} = \frac{a+6}{4+a}$$

$$\frac{-a-6}{4+a}$$

Chapter
6

Simplifying Rational Expressions

Identify each of the following as true or false.
Click on the box to reveal the solution.

1. $\frac{x+4}{2} = x+2, x \neq 0$

F

2. $\frac{x^4 - 2x}{x} = x^3 - 2, x \neq 0$

T

3. $\frac{x^2 - 4}{x - 2} = x + 2, x \neq 2$

T

4. $\frac{x^2 + 6x + 8}{x + 2} = x + 4, x \neq 2, 4$

F

5. $\frac{r^2 - 4}{5r + 10} = \frac{r - 2}{5}, r \in \mathbb{R}$

F

6. $\frac{3t^2 - 8t + 4}{6t^2 - 4t} = \frac{t - 2}{2t}, t \neq 0, \frac{2}{3}$

T

$$3t^2 - 6t - 2t + 4$$

$$3t(t-2) - 2(t-2)$$

$$\frac{(3t-2)(t-2)}{2t(3t-2)}$$

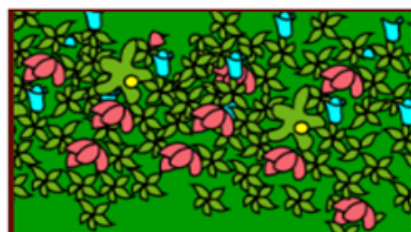
$$\frac{3t-2}{2t} = 0$$

Chapter 6

Apply Rational Expressions

The area of a rectangular garden can be represented by the polynomial $x^2 + 3x + 2$ and its width by $x + 1$. Answer the following:

- a) Write a rational expression that represents the length.
- b) Write the expression in simplest form.
- c) If x represents 1 unit of length, what is the ratio length : width for this garden?



Solution

$$a) \quad l = \frac{x^2 + 3x + 2}{x + 1}$$

$$b) \quad l = \frac{(x+2)(x+1)}{x+1} \\ = x + 2$$

$$c) \quad \textcircled{x=1} \\ x+2 : x+1 \\ 3 : 2$$

$$A = l \cdot w$$

$$\frac{x+2}{x+1} \\ = \frac{3}{2}$$

Practice Problems...

Pages 317 - 321

#4, 6, 8, 13, 15, 17, 19, 21, 22, 24, 25, 26

Bonus: # 27