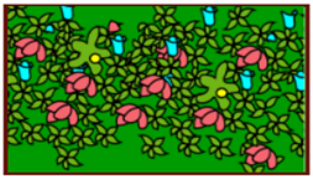
Chapter 6

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

$A = lw$ $\quad l = \frac{A}{w}$

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

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

$l = x+2$ $\quad x > -1$

Chapter 6

Equivalent Expressions

Drag all expressions that are not equivalent to the expression $\frac{3}{x-4}$, in the red box, to the trash can. If the expression is equivalent it cannot be thrown away.

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

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

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

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

$\frac{15x}{5x^2-20x}$

$\frac{9(x+2)}{3(x+2)(x-4)}$

$\frac{3x}{x^2-4x}$

$\frac{3x-9}{x^2-7x+12}$

$\frac{3ab}{ab(x-4)}$

$\frac{9x^2}{3x^3-12x^2}$

$\frac{3x^2}{x^3-4x^2}$

Time to put our simplifying and factoring skills to the test...
Simplify each of the following, stating any non-permissible values for the variables :

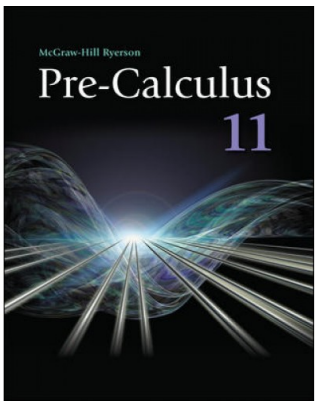
$$\frac{n-7}{6n-12} \cdot \frac{12-6n}{n^2-13n+42}$$

$$\frac{x^2+11x+24}{6x^3+18x^2} \cdot \frac{6x^3+6x^2}{x^2+5x-24}$$

$$\frac{x^2-2x}{x^2+6x-27} \bullet \frac{x^2+8x+16}{x^2+2x-8} \div \frac{x^2-16}{x^2+5x-24}$$

$$\frac{x(x-2)}{(x+9)(x-3)} \cdot \frac{(x+1)(x+4)}{(x+4)(x-2)} \cdot \frac{(x+8)(x-3)}{(x-4)(x+4)}$$

$$\frac{x(x+8)}{(x+9)(x-4)} \quad x \neq -9, 3, -4, 2, 4, -8,$$



Page 327 #1,2,8