

*Homework Answers*

31)  $\{-4 \pm 3i\}$

Pp. 231-232

15) f left 3  
16) e right 4, reflection x-axis, up 3  
17) b right 4, vertical stretch 2, down 1  
18) g down 3  
19) h left 3, vertical compression 1/2, reflection x-axis, up c  
20) a right 3  
21) c left 3, reflection x-axis, up 4  
22) d right 1, vertical stretch 2, down 4

30) a)  $(-2, -9)$  b) min value =  $-9$  c)  $\{y | y \geq -9\}$   
d) decreasing  $(-\infty, -2)$  increasing  $(-2, \infty)$

34) a)  $(-6, 8)$  b) max value =  $8$  c)  $\{y | y \leq 8\}$   
d) decreasing  $(-\infty, -6)$  increasing  $(-6, \infty)$

44) Max area = 128 sq. ft. with length of 16 ft. and width of 8 ft.

$$A = x(32-2x)$$

$$A = -2x^2 + 32x$$

$$\frac{a}{b} = \frac{-32}{-4} = 8$$

$$\frac{a+b}{2} = \frac{-b}{2a}$$

$$x = \frac{-b}{2a}$$

Sep 30-2:37 PM

Oct 9-11:29 AM

## Rational Equations

7:45 - ROOM 2 GLOOM  
GEEZ, I'M SO EXCITED!  
I'M GOING TO HAVE  
A FEAR AND LOATHING  
TO 30 PIT OF DESPAIR

ALGEBRA II  
BIOLOGY  
CHEMISTRY  
PHYSICS  
SOCIAL STUDIES  
HIS II  
LANGUAGE ARTS

I WARNED YOU  
SOPHOMORE YEAR  
WOULD BE TOUGH!

Zits  
By Jerry Scott and Jim Borgman  
<http://www.arcamax.com/zits/v234520-160532>

Sep 30-1:29 PM

Warm-Up:

Find the DQ:  $f(x) = \sqrt{x+1}$

Solve by factoring:  $8x^2 - 2x - 1 = 0$

$$8x^2 - 4x + 1 = 0$$

$$4x^2 - 2x + \frac{1}{4} = 0$$

$$(2x - \frac{1}{2})^2 = 0$$

$$2x - \frac{1}{2} = 0$$

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

$$x = \frac{1}{4}$$

Solve by completing the square:  $x^2 - 2x + 6 = 0$

$$x^2 - 2x + 1 = -6 + 1$$

$$(x - 1)^2 = -5$$

$$x - 1 = \pm \sqrt{-5}$$

$$x = 1 \pm i\sqrt{5}$$

Solve by quadratic formula:  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(6)}}{2(1)}$$

$$x = \frac{2 \pm \sqrt{4 - 24}}{2}$$

$$x = \frac{2 \pm \sqrt{-20}}{2}$$

$$x = \frac{2 \pm 2i\sqrt{5}}{2}$$

$$x = 1 \pm i\sqrt{5}$$

factor:  $64x^3 - 27$

$$(a-b)(a^2+ab+b^2)$$

$$a=4x \quad b=3$$

$$a^2=(4x)^2=16x^2 \quad b^2=9$$

$$ab=12x$$

$$(4x-3)(16x^2+12x+9)$$

$$x = \frac{3 \pm \sqrt{(-3)^2 - 4(1)(-27)}}{2(4x)} = \frac{3 \pm \sqrt{9+108}}{8x} = \frac{3 \pm \sqrt{117}}{8x} = \frac{3 \pm 3\sqrt{13}}{8x} = \frac{3(1 \pm \sqrt{13})}{8x}$$

Sep 30-2:23 PM

Rational Equations: =

Steps: 1. Determine domain restrictions (interested in rational values only)  
2. Multiply both sides by the LCD  
3. Solve the resulting equation  
4. Check for extraneous roots

Examples:

1. Solving for x:  $\frac{3}{x-1} + \frac{2}{x+1} = \frac{3}{x+3}$

$$\frac{3(x+3) + 2(x-1)}{(x-1)(x+1)} = \frac{3(x+3)}{(x+3)(x-1)}$$

$$3x+9+2x-2 = 3x+9$$

$$5x+7 = 3x+9$$

$$2x = 2$$

$$x = 1$$

2. Solving for x:  $\frac{2(x-3)}{x-1} - \frac{4(x+3)}{x+1} = \frac{2(x-3)}{x-1}$

$$\frac{2(x-3)(x+1) - 4(x+3)(x-1)}{(x-1)(x+1)} = \frac{2(x-3)}{(x-1)}$$

$$2x^2 - 6x - 4x^2 - 12 = 2x^2 - 6x$$

$$-2x^2 - 12 = 0$$

$$-2x^2 = 12$$

$$x^2 = -6$$

$$x = \pm \sqrt{-6}$$

$$x = \pm i\sqrt{6}$$

restrictions:  $x \neq 0, \pm 1, \pm 3$

3. Solving for x:  $\frac{3x+12}{2x} = \frac{2x+18}{-2x}$

$$3x+12 = -2x+18$$

$$5x = 6$$

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

4. Solving for x:  $\frac{5}{x-2} + \frac{3}{x+3} = \frac{2}{x+2}$

$$\frac{5(x+3) + 3(x-2)}{(x-2)(x+3)} = \frac{2(x+2)}{(x+2)(x-2)}$$

$$5x+15+3x-6 = 2x+4$$

$$8x+9 = 2x+4$$

$$6x = -5$$

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

5. Solving for x:  $\frac{5x-3}{5x+8} = \frac{x-2}{x+2}$

$$5x-3 = x-2$$

$$4x = 1$$

$$x = \frac{1}{4}$$

Sep 30-2:23 PM

Sep 30-2:23 PM

3.  $\frac{cd: (x+4)(x-4)}{(x+4)(x-4)} x - \frac{4(x+4)(x-4)}{x-4} = \frac{32}{x^2-16}$

$$\cancel{(x+4)(x-4)} x - \cancel{4(x+4)(x-4)} = 32$$

$$x(x+4) - 4(x-4) = 32$$

$$x^2 + 4x - 4x + 16 = 32$$

$$x^2 + 16 = 32$$

$$-16 -16$$

$$\sqrt{x^2 = 16}$$

$$x = \pm 4$$

restriction  $x \neq \pm 4$

4.  $\frac{cd: y(x-1)}{y-1} 1 = \frac{-1}{-1+y} + y$

$$y-1 | \frac{-1}{\cancel{y-1}} + \frac{y(y-1)}{\cancel{y-1}}$$

$$y-1 = -1 + y$$

$$-y+1 +1 -y$$

$$0 = 0$$

all real numbers except  $x=1$

5.  $\frac{(x+2)(x-2)}{x-2} \frac{8}{x-2} + \frac{24}{x^2-4}$

$$\cancel{(x+2)(x-2)} x - \cancel{2} + \frac{24}{(x+2)(x-2)}$$

$$(x+2)(x-2) b = 2x$$

restriction  $x \neq -2$

$$8(x+2) = x(x^2-2x+4) + 24$$

$$8x+16 = x^3-2x^2+4x+24$$

$$-8x-16$$

$$0 = x^3-2x^2-4x+8$$

$$x^2(x-2) - 4(x-2) = 0$$

$x^2 = 4$	$x-2 = 0$
$x = \pm 2$	$x = 2$

$\{ 2 \}$

Sep 30-2:24 PM

Sep 30-2:25 PM

6.  $\frac{x(x+1)}{x(x+1)} \frac{x-3}{x-3} + \frac{3}{x^2+x} = \frac{3x(x+1)}{x(x+1)}$

restriction  $x \neq -1$

$x+1 = 0$

$$(x+1)(x-3) + 3 = 3x$$

$$x^2 - 2x - 3 + 3 = 3x$$

$$x^2 - 5x = 0$$

$$x(x-5) = 0$$

$$x=0 \text{ or } x=5$$

$\{ 5 \}$

HW: p. 218 # 34

pp. 241 - 242 # 4, 12, 13, 14, 22



QUIZ Tomorrow - Function

Properties !!

Oct 15-11:09 AM

Oct 12-4:53 PM

Oct 6-10:39 AM