

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 3

20) a right 3

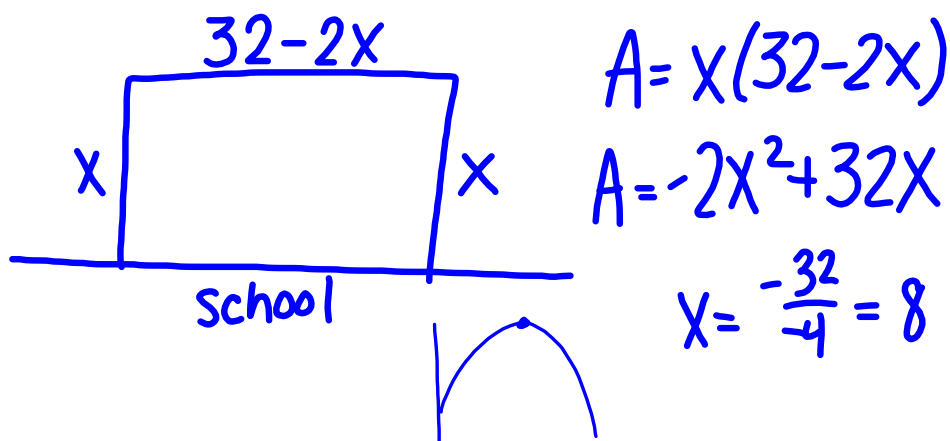
21) c left 3, reflection x-axis, up 4

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 $(-6, \infty)$ increasing $(-\infty, -6)$

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

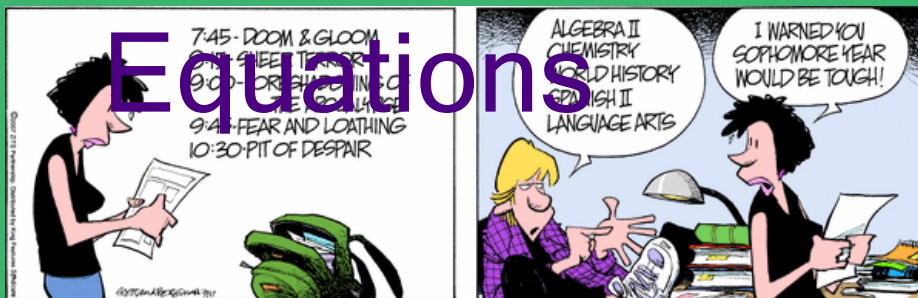
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Rational

Equations



Zits

By Jerry Scott and Jim Borgman

<http://www.arcamax.com/zits/s-234520-160532>

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Warm-Up:

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

$$f(x+h) = \sqrt{x+h+1}$$

$$DQ = \frac{\sqrt{x+h+1} - \sqrt{x+1}}{h} \cdot \frac{\sqrt{x+h+1} + \sqrt{x+1}}{\sqrt{x+h+1} + \sqrt{x+1}}$$

$$DQ = \frac{x+h+1 - (x+1)}{h(\sqrt{x+h+1} + \sqrt{x+1})} = \frac{x+h+1-x-1}{h(\sqrt{x+h+1} + \sqrt{x+1})}$$

$$DQ = \frac{h}{h(\sqrt{x+h+1} + \sqrt{x+1})} = \frac{1}{\sqrt{x+h+1} + \sqrt{x+1}}$$

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Rational Equations:

- Steps:
1. Determine domain restrictions (interested in rational values only)
 $\text{Denominator} = 0 \quad x \neq$
 2. Multiply both sides by the LCD
 3. Solve the resulting equation (linear or quadratic)
 4. Check for extraneous roots

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Examples:

1. $\frac{6x}{1} \left[\frac{1}{2} + \frac{2}{x} \right] = \frac{6x}{1} \left[\frac{1}{3} + \frac{3}{x} \right]$ LCD: $6x$ $x \neq 0$

$$\left(\frac{6x}{1} \cdot \frac{1}{2} \right) + \left(\frac{6x}{1} \cdot \frac{2}{x} \right) = \left(\frac{6x}{1} \cdot \frac{1}{3} \right) + \left(\frac{6x}{1} \cdot \frac{3}{x} \right)$$

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

$$\begin{array}{r} -2x - 12 \\ \hline x : 6 \end{array}$$

$$\{6\}$$

2. $\frac{2}{x} - \frac{4}{x-3} = 5$ LCD: $x(x-3)$ $x \neq 0, 3$

$$\frac{x(x-3)}{1} \left[\frac{2}{x} - \frac{4}{x-3} = \frac{5}{1} \right]$$

$$2(x-3) - 4x = 5x(x-3)$$

$$2x - 6 - 4x = 5x^2 - 15x$$

$$\begin{array}{r} -2x - 6 \\ \hline +2x + 6 \end{array}$$

$$5x^2 - 13x + 6 = 0$$

$$\begin{array}{r} 5x^2 - 10x - 3x + 6 : 0 \\ \hline 5x(x-2) - 3(x-2) : 0 \end{array}$$

$$(x-2)(5x-3) : 0$$

$$\begin{array}{l|l} x-2 : 0 & 5x-3 : 0 \\ x : 2 & x : 3/5 \end{array}$$

$$\{2, \frac{3}{5}\}$$

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

4. $1 = \frac{1}{1-y} + \frac{y}{y-1}$ $y \neq 1$

$\frac{(x-4)(x+4)}{1} \left[\frac{x}{x-4} - \frac{4}{x+4} = \frac{32}{(x-4)(x+4)} \right]$ $\left[1 = \frac{1}{1-y} - \frac{y}{1-y} \right] \frac{1-y}{1}$

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

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

$x^2 + 16 = 32$

$-16 -16$

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

$x = \pm 4$

$\{ \}$

$1-y = 1-y$ Identity

$0 = 0$ $0 \neq 1$

$\{ \}$

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5. $\frac{8}{x^2-2x+4} = \frac{x}{x+2} + \frac{24}{x^3+8}$ $x \neq -2$ LCD: $(x+2)(x^2-2x+4)$

$\frac{(x+2)(x^2-2x+4)}{1} \left[\frac{8}{x^2-2x+4} = \frac{x}{x+2} + \frac{24}{(x+2)(x^2-2x+4)} \right]$

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

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

$-8x-16$ $-8x-16$

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

$x^2 - 4$

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

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

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

$x=2$ $\sqrt{x^2}=4$

$x=\pm 2$

$\{2\}$

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6. $\frac{x-3}{x} + \frac{3}{x^2+x} = \frac{3}{x+1}$ LCD $x(x+1)$
 $x \neq 0, -1$

$x(x+1) \left[\frac{x-3}{x} + \frac{3}{x(x+1)} = \frac{3}{x+1} \right] \quad \{5\}$

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

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

$x^2 - 2x = 3x$

$\quad \quad \quad \underline{-3x} \quad \underline{-3x}$

$x^2 - 5x = 0$

$x(x-5) = 0$

$x=0$	$x-5=0$
	$x=5$

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HW: p. 218 # 34

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

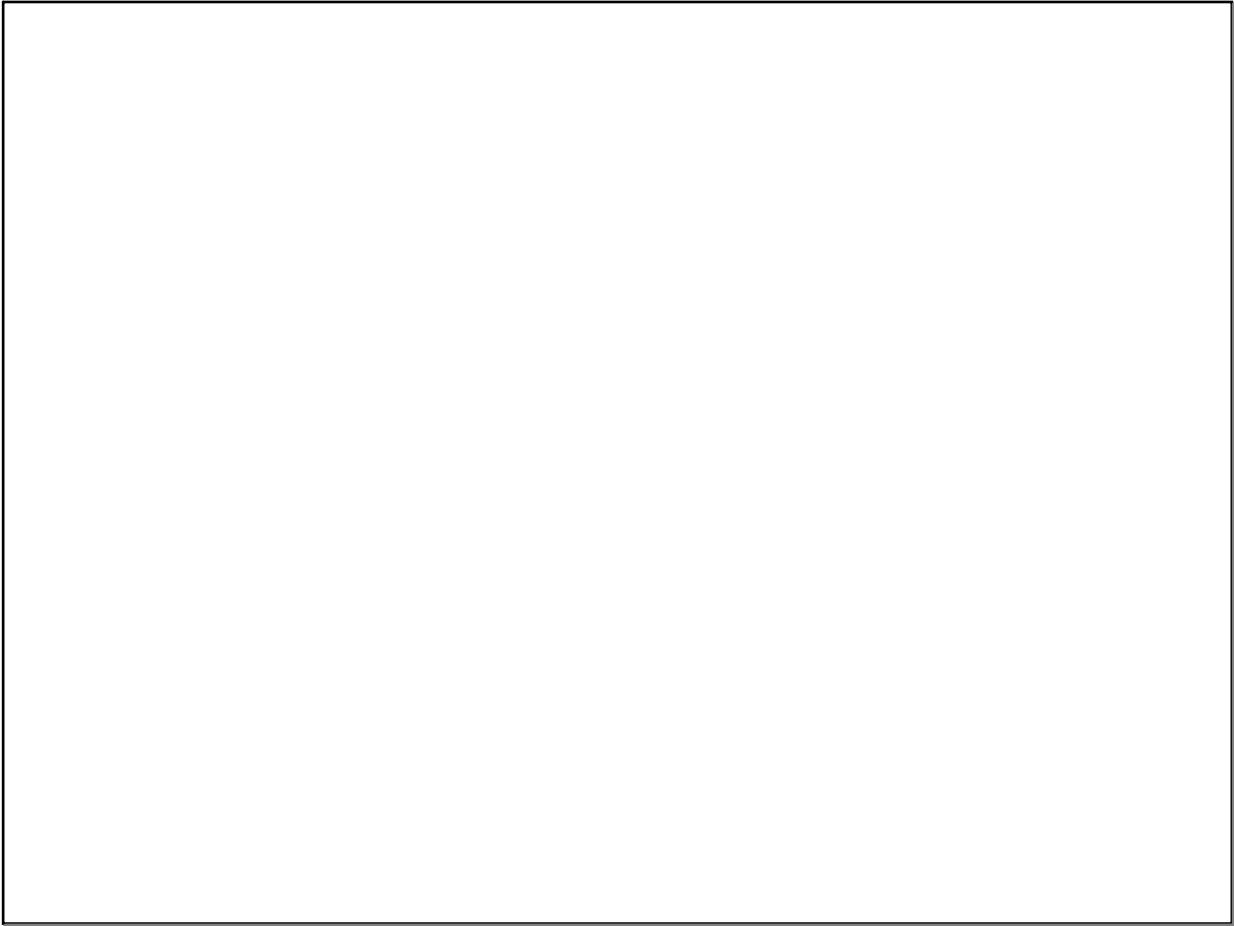


QUIZ Thursday - Parabolas

(Vertex Form and Standard

Form! !)

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Oct 6-10:39 AM