

March 8th

Due Today: HW 9.2

Due Tomorrow: HW 9.3

Unit 9: Quadratic Functions**Lesson 9.3: Solving Quadratics using the Quadratic Formula****Get Ready: Check your homework!****Answers to HW 9.2**

1) 16

2) $\frac{9}{4}$

3) 100

4) 4

5) $\{4, 2\}$

6) $\{5, -15\}$

7) $\{-3, -17\}$

8) $\{3, 1\}$

9) $\{21, -3\}$

10) $\{2, -4\}$

11) $\{4, -2\}$

12) $\{5, -3\}$

13) $\{6, 2\}$

14) $\{7, 0\}$

15) $\{3, -4\}$

16) $\{-2\}$

Homework Review

$$\textcircled{7} \quad p^2 + \underline{20}p = -51$$

$+100 \qquad +100$

$$\frac{20}{2} = 10^2 = 100$$

$$p^2 + 20p + 100 = 49$$

$$\sqrt{(p+10)^2} = \sqrt{49}$$

$$p+10 = \pm 7$$

$$p+10=7 \quad -10 \quad -10 \quad , \quad p+10=-7 \quad -10 \quad -10$$

$$p = -3, -17$$

⑧

$$\begin{array}{r} x^2 - 12x + 16 = 3 - 8x \\ +8x - 6 \quad -6 + 8x \\ \hline \end{array}$$

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

$$-\frac{4}{2} = (-2)^2 = 4$$

$$\begin{array}{l} x^2 - 4x + 4 = 1 \\ \sqrt{(x-2)^2} = \sqrt{1} \end{array}$$

$$x - 2 = \pm 1$$

$$x - 2 = 1, \quad x - 2 = -1$$

$$\boxed{x = 3, x = 1}$$

$$\textcircled{6} \quad \begin{array}{r} K^2 - 75 = -10K \\ \quad +75 \qquad \qquad +75 \\ \quad +10K \qquad \quad +10K \\ \hline \end{array}$$

$$K^2 + 10K = 75$$

+25 +25

$$\sqrt{(K+5)^2} = \sqrt{100}$$

$$K+5 = \pm 10$$

$$\boxed{K = 5, K = -15}$$

$$\textcircled{11} \quad 3n^2 - 6n - 28 = -4$$

$$\quad \quad \quad +28 \quad +28$$

$$3n^2 - 6n = 24$$

$$\cancel{3}(n^2 - 2n) = \frac{24}{\cancel{3}}$$

$$n^2 - 2n + 1 = 8 + 1$$

$$\left(\frac{-2}{2} + 1\right)^2 = 1$$

$$(n - 1)^2 = 9$$

$$\textcircled{12} \quad 6n^2 - 12n - 85 = 5$$

$$\quad \quad \quad +85 \quad +85$$

$$6n^2 - 12n = 90$$

$$6(n^2 - \underline{2}n + 1) = 90$$

$$\frac{-2}{2} = (-1)^2 = +1 \quad +6$$

$$\frac{6(n^2 - 2n + 1)}{6} = \frac{90}{6}$$

$$n^2 - 2n + 1 = 16$$

$$\sqrt{(n-1)^2} = \sqrt{16}$$

$$n-1 = \pm 4$$

$$\begin{array}{cc} n-1=4 & , \quad n-1=-4 \\ +1 \quad +1 & \quad +1 \quad +1 \end{array}$$

$$\boxed{n = 5, -3}$$

$$\textcircled{14} \quad \begin{array}{r} p^2 - 7p - 3 = -3 \\ \quad \quad \quad +3 \quad \quad +3 \\ \hline p^2 - 7p = 0 \end{array}$$

$$p(p-7) = 0$$

$$\boxed{p=0}, \quad p-7=0$$
$$\boxed{p=7}$$

$$\begin{aligned} \textcircled{16} \quad & 6b^2 + 24b = -24 \\ & \quad \quad \quad +24 \quad +24 \\ \hline & 6b^2 + 24b + 24 = 0 \\ & 6(b^2 + 4b + 4) = 0 \\ & 6(b+2)(b+2) = 0 \\ & \cancel{6=0} \quad b+2=0 \\ & \quad \quad \boxed{b=-2} \end{aligned}$$

QUADRATICS

- Algebraic Solutions

- factoring ✓

$$x^2 + 3x + 7 = 0$$

- completing the square ✓

$$x^2 + 3x = -7$$

- the quadratic formula ✓

$$\frac{-3 \pm \sqrt{9 - 4(1)(7)}}{2(1)}$$

SOLVING QUADRATIC EQUATIONS WITH THE QUADRATIC FORMULA!

$$\therefore x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$ax^2 + bx + c = 0$$

WORKS FOR ALL QUADRATICS!

$$2x^2 + x - 21 = 0$$

$$A=2, B=1, C=-21$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-1 \pm \sqrt{(1)^2 - 4(2)(-21)}}{2(2)}$$

$$x = \frac{-1 \pm \sqrt{169}}{4}$$

$$x = \frac{-1 \pm 13}{4}$$

$$= \frac{-1+13}{4}, \frac{-1-13}{4}$$

$$= \frac{12}{4}, \frac{-14}{4}$$

$$x = 3, -3.5$$

$$\begin{array}{r} 15p^2 - 12p - 28 = 11p^2 + 12 \\ -11p^2 \quad -12 - 11p^2 - 12 \\ \hline \end{array}$$

$$4p^2 - 12p - 40 = 0$$

$$A=4, B=-12, C=-40$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-(-12) \pm \sqrt{(-12)^2 - 4(4)(-40)}}{2(4)}$$

$$= \frac{12 \pm \sqrt{784}}{8}$$

$$= \frac{12 \pm 28}{8}$$

$$= \frac{12+28}{8}, \frac{12-28}{8}$$

$$= \frac{40}{8}, \frac{-16}{8}$$

$$x = 5, -2$$

$$\begin{array}{r} 9z^2 + 10z + 3 = 6z^2 + 7z \\ -6z^2 - 7z \quad -6z^2 - 7z \\ \hline \end{array}$$

$$3z^2 + 3z + 3 = 0$$

$$A=3, B=3, C=3$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-3 \pm \sqrt{(3)^2 - 4(3)(3)}}{2(3)}$$

Xuh oh = $\frac{-3 \pm \sqrt{-27}}{6}$

you can't take
the square root
of a negative #.

(actually you
can.... but its
imaginary)

No Real
Solutions

The Discriminate: $b^2 - 4ac$

$$-6x^2 + 8x + 8 = 0$$

$$a = -6, b = 8, c = 8$$

$$b^2 - 4ac$$

$$(8)^2 - 4(-6)(8)$$

$$256$$

positive
there are
2 Real
Solutions

$$8k^2 - 8k + 2 = 0$$

$$a = 8, b = -8, c = 2$$

$$b^2 - 4ac$$

$$(-8)^2 - 4(8)(2)$$

$$0$$

Zero
one Real
Solution

$$-b^2 + 2b - 7 = 0$$

$$a = -1, b = 2, c = -7$$

$$b^2 - 4ac$$

$$(2)^2 - 4(-1)(-7)$$

$$-24$$

Negative
No Real
Solutions

Solve using the Quadratic Formula

$$v^2 - 2v - 3 = 0$$

$$2x^2 - 10 = -x$$

$$5b^2 - 109 = 4b - 4$$

Unit 9: Quadratic Equations

Lesson #	Name	Recap	HW
9.1	Intro to Quadratics		HW 9.1
9.2	Solving Quads by Completing the Square		HW 9.2
9.3	Solving Quads using the Quadratic Formula		HW 9.3 QUIZ WED: - factoring, comp. the square, quad formula

	Quadratic Formula	Completing the Square	Factoring	Any Method
	$v^2 - 2v - 3 = 0$	$x^2 + 18x - 19 = 0$	$x^2 - 14x = -49$	$6n^2 - 66n = -144$
	$2x^2 - 10 = -x$	$4x^2 - 32 = 8x$	$8x^2 + 72x = -144$	$r^2 - 16r + 38 = -10$
	$5b^2 - 109 = 4b - 4$	$-7x^2 + 6x - 97 = -6 - 8x^2$	$7m^2 = -30 - 41m$	$3k^2 = k + 52$

QUADRATIC FORMULA

1) $v^2 - 2v - 3 = 0$

$\{3, -1\}$

2) $2x^2 - 10 = -x$

$\{2, -2.5\}$

3) $5b^2 - 109 = 4b - 4$

$\{5, -4.2\}$

COMPLETING THE SQUARE

4) $x^2 + 18x - 19 = 0$

$\{1, -19\}$

5) $4x^2 - 32 = 8x$

$\{4, -2\}$

6) $-7x^2 + 6x - 97 = -6 - 8x^2$

$\{7, -13\}$

FACTORING

7) $x^2 - 14x = -49$

$\{7\}$

8) $8x^2 + 72x = -144$

$\{-3, -6\}$

9) $7m^2 = -30 - 41m$

$\left\{-\frac{6}{7}, -5\right\}$

MIX

10) $6n^2 - 66n = -144$

$\{8, 3\}$

11) $r^2 - 16r + 38 = -10$

$\{12, 4\}$

12) $3k^2 = k + 52$

$\{4.333, -4\}$

