DO NOW:

1) Solve the quadratic equation by factoring.

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

$(x^2 - 4x)(-2x + 8) = 0$

$8 \mid -6$

$-4 \cdot -2 \mid -4 + -2$

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

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

$x - 2 = 0 \mid x - 4 = 0$

$x = 2, 4$

2) Solve the quadratic

$(x - 7)^2 + 3 = 67$

$-3 \quad -3$

$\sqrt{(x-7)^2} = \sqrt{64}$

$x - 7 = \pm 8$

$+ \qquad -$

$x - 7 = 8 \qquad x - 7 = -8$

$+7 \quad +7 \qquad +7 \quad +7$

$x = 15 \qquad x = -1$

$x = -1, 15$

Mar 23-6:54 PM

1) ± 3

WORK SHOWN: $3x^2 = 27, x^2 = 9, x = \pm\sqrt{9} = \pm 3$ 1) ± 3

Homework Answers

2) {-1,5} 2) $x = 5, -1$

WORK SHOWN: $6(x-2)^2 = 54, (x-2)^2 = 9, x - 2 = \pm\sqrt{9}, x = 2 \pm 3, x = 5$ or $x = -1$

3) $3 \pm \sqrt{6}$ 3) $x = 3 \pm \sqrt{6}$

WORK SHOWN: $2(x-3)^2 - 12 = 0, 2(x-3)^2 = 12, (x-3)^2 = 6, x - 3 = \pm\sqrt{6}, x = 3 \pm \sqrt{6}$

4) $\pm\frac{9}{2}$ 4) $x = \pm\frac{9}{2}$

WORK SHOWN: $4x^2 - 81 = 0, 4x^2 = 81, x^2 = \frac{81}{4}, x = \pm\sqrt{\frac{81}{4}}, x = \pm\frac{9}{2}$

5) $\{-1, \frac{1}{6}\}$ 5) $a = -1, \frac{1}{6}$

WORK SHOWN: $6a^2 + 5a - 1 = 0, (6a-1)(x+1), 6a - 1 = 0, a = \frac{1}{6}$ OR $a + 1 = 0, a = -1$

6) {1,2} 6) $x = 1, 2$

WORK SHOWN: $3x^2 - 9x + 6 = 0, 3(x^2 - 3x + 2) = 0, 3(x-2)(x-1) = 0\, x - 2 = 0, x = 2$ OR $x - 1 = 0, x - 1$

7) ± 5 $x = \pm 5$

WORK SHOWN: $27 = x^2 + 2, x^2 - 25 = 0, (x-5)(x+5) = 0, x - 5 = 0, x = 5$ OR $x + 5 = 0, x = -5$

8) 3 8) $x = 3$

WORK SHOWN: $18 = 12z - 2z^2, 2z^2 - 12z + 18 = 0, 2(z^2 - 6z + 9) = 0, 2(z-3)^2 = 0\, z - 3 = 0, z = 3$

Mar 12-6:46 AM

Intro to Quadratic Formula

What is the Quadratic Formula?

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

Roots

"Zeros"

X-intercepts

Used to Solve **ANY** Quadratic Equation

that is in the form of $ax^2 + bx + c = 0$

Mar 31-11:23 AM

Solving Quadratic Equations Using the Quadratic Formula

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

Step 1: Get the equation in standard form: $ax^2 + bx + c = 0$.

Step 2: Identify a, b, and c, and substitute them into the quadratic formula.

Step 3: Simplify the radicand (everything inside the radical).

Step 4: Solve for each solution separately (±).

Step 5: Reduce each solution if possible.

Mar 23-6:58 PM

Example 1:

$2x^2 + 7x - 9 = 0$

$a = 2$
$b = 7$
$c = -9$

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

$$x = \frac{-(7) \pm \sqrt{(7)^2 - 4(2)(-9)}}{2(2)}$$

$$x = \frac{-7 \pm \sqrt{49 + 72}}{4}$$

$$x = \frac{-7 \pm \sqrt{121}}{4}$$

$$x = \frac{-7 \pm 11}{4}$$

$+$: $x = \frac{-7+11}{4}$, $x = \frac{4}{4}$, $x = 1$

$-$: $x = \frac{-7-11}{4}$, $x = \frac{-18}{4}$, $x = \frac{-9}{2} = -4.5$

$x = 1, -4.5$

Mar 23-7:20 PM

Example 3:

$5w^2 + 4 = w + 6$

$-w - 6 \quad -w - 6$

$5w^2 - w - 2 = 0$

$a = 5$
$b = -1$
$c = -2$

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

$$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(5)(-2)}}{2(5)}$$

$$x = \frac{1 \pm \sqrt{1 + 40}}{10}$$

$$x = \frac{1 \pm \sqrt{41}}{10}$$

$+$: $x = \frac{1+\sqrt{41}}{10}$, $x = .74$

$-$: $x = \frac{1-\sqrt{41}}{10}$, $x = -.54$

Mar 23-7:21 PM