

Name

9.6 Solve Quadratic Equations
by the Quadratic Formula

Alg I

I can solve
quadratic
equations
using the
quadratic
formula

$$\text{Quadratic Formula: } X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Example 1/2:

1) $X^2 - 8X + 16 = 0$ $a=1$ $b=-8$ $c=16$

$$X = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(16)}}{2(1)} = \frac{8 \pm \sqrt{64 - 64}}{2} = \frac{8 \pm 0}{2} = \boxed{4}$$

No. 9 Quiz

2) $3n^2 - 5n = -1$ $a=3$ $b=-5$ $c=1$
 $\quad \quad \quad +1 \quad +1$

$$3n^2 - 5n + 1 = 0$$

$$X = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(1)}}{2(3)} = \frac{5 \pm \sqrt{25 - 12}}{6} = \frac{5 \pm \sqrt{13}}{6}$$

$$\sqrt{13} \quad X = \frac{5 \pm 3.6}{6} \quad \frac{5+3.6}{6} = \frac{8.6}{6} = \boxed{1.43}$$

$$\begin{array}{r} \sqrt{9} \quad \sqrt{16} \\ \downarrow \quad \downarrow \\ 3 \quad 4 \end{array}$$

$$\frac{5-3.6}{6} = \frac{1.4}{6} = \boxed{0.23}$$

3) $4z^2 = 7z + 2$ $a=4$ $b=-7$ $c=-2$
 $\quad \quad \quad -7z - 2 \quad -7z - 2$

$$4z^2 - 7z - 2 = 0$$

$$X = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(4)(-2)}}{2(4)} = \frac{7 \pm \sqrt{49 + 32}}{8} = \frac{7 \pm \sqrt{81}}{8}$$

$$X = \frac{7+9}{8} = \frac{16}{8} = \boxed{2} \quad X = \frac{7-9}{8} = \frac{-2}{8} = \boxed{-\frac{1}{4}}$$

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I can solve quadratic equations using the quadratic formula

Example 3:

$$4) \quad y = 10x^2 - 94x + 3900 \quad a=10 \quad b=-94$$

$$4750 = 10x^2 - 94x + 3900 \quad c = -850$$

$$\begin{array}{r} -4750 \qquad \qquad -4750 \\ \hline 0 = 10x^2 - 94x - 850 \end{array}$$

Ch. 9 Quiz

$$x = \frac{-(-94) \pm \sqrt{(-94)^2 - 4(10)(-850)}}{2(10)} = \frac{94 \pm \sqrt{8,836 + 34,000}}{20}$$

$$\frac{94 \pm \sqrt{42,836}}{20} \approx 15 \quad 1971 \div 15 = \boxed{1986}$$

* Complete Skills

Practice, pg. 616, #

Example 4:

$$5) \quad x^2 + x - 6 = 0$$

Factoring

$$6) \quad x^2 - 9 = 0$$

Factoring or Square Roots

$$7) \quad x^2 + 6x = 5$$

Quadratic Formula
Completing the Square