



Math Olympiad and Problem Solving Programs  
E120 - Honors Algebra Problem Solving  
Problem Set 22.1 - Quadratic Formula

Name:

Date:

**Instruction:** Solve each quadratic equation using the quadratic formula. Show your work.

**The Quadratic Formula:**  $ax^2 + bx + c = 0$ ,  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ .

1.  $x = 1 \pm \sqrt{3}$

2.  $x = -2 \pm \sqrt{10}$

3. No Real Solution;  $x = 2 \pm 3i$

4. No Real Solution;  $x = -3 \pm 2\sqrt{5}i$

5.  $x = \frac{5 \pm 3\sqrt{5}}{2}$

6.  $x = \frac{-3 \pm \sqrt{5}}{2}$

7.  $x = -\frac{8}{3}, 1$

8.  $x = \frac{4 \pm \sqrt{6}}{2}$

9.

$$\begin{aligned} x &= \frac{-(-4) \pm \sqrt{(-4)^2 - 4(3)(-5)}}{2(3)} \\ &= \frac{4 \pm \sqrt{16 + 60}}{6} \\ &= \frac{4 \pm \sqrt{76}}{6} \\ &= \frac{4 \pm 2\sqrt{19}}{6} \\ &= \frac{2 \pm \sqrt{19}}{3} \end{aligned}$$

10.  $x = -7, -3$