

Answer Key

Quiz Review: Quadratic Formula / Square Root Property

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

① $10x^2 + 4x = -4$

$$10x^2 + 4x + 4 = 0$$

$$= \frac{-4 \pm \sqrt{(4)^2 - 4(10)(4)}}{2(10)}$$

$$= \frac{-4 \pm \sqrt{-144}}{20}$$

$$= \frac{-4 \pm 12i}{20}$$

$$x = \frac{-1 \pm 3i}{5}$$

② $4b^2 + 4b = -10$

$$4b^2 + 4b + 10 = 0$$

$$= \frac{-4 \pm \sqrt{(4)^2 - 4(4)(10)}}{2(4)}$$

$$= \frac{-4 \pm \sqrt{-144}}{4}$$

$$= \frac{-4 \pm 12i}{4}$$

$$= -1 \pm 3i$$

③ $4x^2 + 7 = 4x$

$$4x^2 - 4x + 7 = 0$$

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

$$= \frac{4 \pm \sqrt{-96}}{8}$$

$$= \frac{4 \pm 4i\sqrt{6}}{8} = \frac{1 \pm i\sqrt{6}}{2}$$

$$= \frac{1 \pm i\sqrt{6}}{2}$$

④ $9x^2 = 6 - 8x$

$$9x^2 + 8x - 6 = 0$$

$$= \frac{-8 \pm \sqrt{8^2 - 4(9)(-6)}}{2(9)}$$

$$= \frac{-8 \pm \sqrt{280}}{18}$$

$$= \frac{-8 \pm 2i\sqrt{70}}{18} = \frac{-4 \pm i\sqrt{70}}{9}$$

$$= \frac{-4 \pm i\sqrt{70}}{9}$$

⑤ $5z^2 - 48 = -8z$

$$5z^2 + 8z - 48 = 0$$

$$= \frac{-8 \pm \sqrt{(8)^2 - 4(5)(-48)}}{2(5)}$$

$$= \frac{-8 \pm \sqrt{1024}}{10}$$

$$= \frac{-8 \pm 32}{10} = \frac{12 \text{ and } -4}{5}$$

⑥ $5x^2 - 10x = -1$

$$5x^2 - 10x + 1 = 0$$

$$= \frac{-(-10) \pm \sqrt{(-10)^2 - 4(5)(1)}}{2(5)}$$

$$= \frac{10 \pm \sqrt{80}}{10}$$

$$= \frac{10 \pm 4\sqrt{5}}{10} = \frac{10}{10} \pm \frac{4\sqrt{5}}{10} = \frac{1 \pm 2\sqrt{5}}{5}$$

Square Root Property

$$\textcircled{7} \quad \sqrt{(5x+1)^2} = \sqrt{25}$$

$$\frac{5x+1}{-1} = \frac{\pm 5}{-1}$$

$$\frac{5x}{5} = \frac{4}{5} \quad \text{and} \quad \frac{5x}{5} = \frac{-6}{5}$$

$$x = \frac{4}{5} \quad \text{and} \quad x = \frac{-6}{5}$$

$$\textcircled{8} \quad 2x^2 + 5 = 19$$

$$\frac{2x^2}{2} = \frac{14}{2}$$

$$x^2 = 7$$

$$x = \pm \sqrt{7}$$

$$\textcircled{9} \quad \frac{2(7x+5)^2}{2} = \frac{20}{2}$$

$$(7x+5)^2 = 10$$

$$7x+5 = \pm \sqrt{10}$$

$$\frac{7x}{7} = \frac{-5 \pm \sqrt{10}}{7}$$

$$x = \frac{-5 \pm \sqrt{10}}{7}$$

$$\textcircled{10} \quad 5(x-1)^2 + 10 = 110$$

$$\frac{5(x-1)^2}{5} = \frac{100}{5}$$

$$\sqrt{(x-1)^2} = \sqrt{20}$$

$$\frac{x-1}{+1} = \frac{\pm 2\sqrt{5}}{+1}$$

$$x = 1 \pm 2\sqrt{5}$$

$$\textcircled{11} \quad x^2 = -81$$

$$x = \pm 9i$$

$$\textcircled{12} \quad 2x^2 + 26 = -10$$

$$\frac{2x^2}{2} = \frac{-36}{2}$$

$$x^2 = -18$$

$$x = \pm 3i\sqrt{2}$$

$$\textcircled{13} \quad -2(x-1)^2 = 36$$

$$\sqrt{(x-1)^2} = \sqrt{-18}$$

$$\frac{x-1}{+1} = \frac{\pm 3i\sqrt{2}}{+1}$$

$$x = 1 \pm 3i\sqrt{2}$$

$$\textcircled{14} \quad 7x^2 - 10 = -86$$

$$\frac{7x^2}{7} = \frac{-76}{7}$$

$$x^2 = \sqrt{\frac{-76}{7}} \quad \text{*NOT ON QUIZ}$$

$$x = \pm i\sqrt{\frac{76}{7}}$$

$$\textcircled{15} \quad 5(x-2)^2 + 20 = -220$$

$$\frac{-20}{-20} \quad \frac{-220}{-20}$$

$$5(x-2)^2 = -240$$

$$(x-2)^2 = -48$$

$$x-2 = \pm 4i\sqrt{3}$$

$$x = 2 \pm 4i\sqrt{3}$$