

A.REI.B.4: Solving Quadratics 9

- 1 The solution to the equation $4x^2 + 98 = 0$ is
- 1) ± 7 3) $\pm \frac{7\sqrt{2}}{2}$
2) $\pm 7i$ 4) $\pm \frac{7i\sqrt{2}}{2}$
- 2 What is the solution when the equation $wx^2 + w = 0$ is solved for x , where w is a positive integer?
- 1) -1 3) 6
2) 0 4) $\pm i$
- 3 The roots of the equation $x^2 + 2x + 5 = 0$ are
- 1) -3 and 1 3) $-1 + 2i$ and $-1 - 2i$
2) -1 , only 4) $-1 + 4i$ and $-1 - 4i$
- 4 The roots of the equation $0 = x^2 + 6x + 10$ in simplest $a + bi$ form are
- 1) $-3 \pm 2i$ 3) $-3 \pm i$
2) $-6 \pm i$ 4) $-3 \pm i\sqrt{2}$
- 5 The roots of the equation $x^2 - 4x = -13$ are
- 1) $2 \pm 3i$ 3) $2 \pm \sqrt{17}$
2) $2 \pm 6i$ 4) $2 \pm \sqrt{13}$
- 6 The solutions to the equation $-\frac{1}{2}x^2 = -6x + 20$ are
- 1) $-6 \pm 2i$ 3) $6 \pm 2i$
2) $-6 \pm 2\sqrt{19}$ 4) $6 \pm 2\sqrt{19}$
- 7 A solution of the equation $2x^2 + 3x + 2 = 0$ is
- 1) $-\frac{3}{4} + \frac{1}{4}i\sqrt{7}$ 3) $-\frac{3}{4} + \frac{1}{4}\sqrt{7}$
2) $-\frac{3}{4} + \frac{1}{4}i$ 4) $\frac{1}{2}$
- 8 The roots of the equation $3x^2 + 2x = -7$ are
- 1) $-2, -\frac{1}{3}$ 3) $-\frac{1}{3} \pm \frac{2i\sqrt{5}}{3}$
2) $-\frac{7}{3}, 1$ 4) $-\frac{1}{3} \pm \frac{\sqrt{11}}{3}$

- 2

A.REI.B.4: Solving Quadratics 9 Answer Section

1 ANS: 4

$$4x^2 = -98$$

$$x^2 = -\frac{98}{4}$$

$$x^2 = -\frac{49}{2}$$

$$x = \pm \sqrt{-\frac{49}{2}} = \pm \frac{7i}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \pm \frac{7i\sqrt{2}}{2}$$

REF: 061707aaii

2 ANS: 4

$$wx^2 + w = 0$$

$$w(x^2 + 1) = 0$$

$$x^2 = -1$$

$$x = \pm i$$

REF: 061912aaii

3 ANS: 3

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

$$(x + 1)^2 = -4$$

$$x + 1 = \pm 2i$$

$$x = -1 \pm 2i$$

REF: 081703aaii

4 ANS: 3

$$x^2 + 6x + 9 = -10 + 9$$

$$(x + 3)^2 = -1$$

$$x + 3 = \pm i$$

$$x = -3 \pm i$$

REF: 012416aaii

5 ANS: 1

$$x^2 - 4x + 4 = -13 + 4$$

$$(x - 2)^2 = -9$$

$$x - 2 = \pm 3i$$

$$x = 2 \pm 3i$$

REF: 062312aai

6 ANS: 3

$$-2\left(-\frac{1}{2}x^2 = -6x + 20\right)$$

$$x^2 - 12x = -40$$

$$x^2 - 12x + 36 = -40 + 36$$

$$(x - 6)^2 = -4$$

$$x - 6 = \pm 2i$$

$$x = 6 \pm 2i$$

REF: fall1504aai

7 ANS: 1

$$x = \frac{-3 \pm \sqrt{3^2 - 4(2)(2)}}{2(2)} = \frac{-3 \pm \sqrt{-7}}{4} = -\frac{3}{4} \pm \frac{i\sqrt{7}}{4}$$

REF: 061612aai

8 ANS: 3

$$x = \frac{-2 \pm \sqrt{2^2 - 4(3)(7)}}{2(3)} = \frac{-2 \pm \sqrt{-80}}{6} = \frac{-2 \pm i\sqrt{16}\sqrt{5}}{6} = -\frac{1}{3} \pm \frac{2i\sqrt{5}}{3}$$

REF: 081809aai

9 ANS: 2

$$4x^2 - 7x + 8 = 0 \quad x = \frac{7 \pm \sqrt{(-7)^2 - 4(4)(8)}}{2(4)} = \frac{7 \pm \sqrt{-79}}{8}$$

REF: 012507aai

10 ANS: 2

$$x = \frac{2 \pm \sqrt{(-2)^2 - 4(5)(4)}}{2(5)} = \frac{2 \pm \sqrt{-76}}{10} = \frac{2 \pm i\sqrt{4}\sqrt{19}}{10} = \frac{1}{5} \pm \frac{i\sqrt{19}}{5}$$

REF: 011905aai

11 ANS: 4

$$x = \frac{8 \pm \sqrt{(-8)^2 - 4(6)(29)}}{2(6)} = \frac{8 \pm \sqrt{-632}}{12} = \frac{8 \pm i\sqrt{4}\sqrt{158}}{12} = \frac{2}{3} \pm \frac{1}{6}i\sqrt{158}$$

REF: 011711aii

12 ANS: 2

$$3x^2 - 4x + 2 = 2x - 3 \quad x = \frac{6 \pm \sqrt{(-6)^2 - 4(3)(5)}}{2(3)} = \frac{6 \pm \sqrt{-24}}{6} = \frac{6 \pm 2i\sqrt{6}}{6} = 1 \pm \frac{i\sqrt{6}}{3}$$

$$3x^2 - 6x + 5 = 0$$

REF: 062410aii

13 ANS: 2

$$5x^2 - 4x + 2 = 0 \quad \frac{4 \pm \sqrt{(-4)^2 - 4(5)(2)}}{2(5)} = \frac{4 \pm \sqrt{-24}}{10} = \frac{4 \pm 2i\sqrt{6}}{10} = \frac{2 \pm i\sqrt{6}}{5}$$

REF: 012020aii

14 ANS:

$$x = \frac{-3 \pm \sqrt{3^2 - 4(1)(11)}}{2(1)} = \frac{-3 \pm \sqrt{-35}}{2} = -\frac{3}{2} \pm \frac{i\sqrt{35}}{2}$$

REF: 082432aii

15 ANS:

$$x = \frac{-5 \pm \sqrt{5^2 - 4(2)(8)}}{2(2)} = -\frac{5}{4} \pm \frac{i\sqrt{39}}{4}$$

REF: 061827aii

16 ANS:

$$x = \frac{-5 \pm \sqrt{5^2 - 4(3)(8)}}{2(3)} = -\frac{5}{6} \pm \frac{i\sqrt{71}}{6}$$

REF: 082327aii

17 ANS:

$$x^2 - 6x = -17 \quad \text{The solution is imaginary because the parabola and line do not intersect.}$$

$$x^2 - 6x + 9 = -17 + 9$$

$$(x - 3)^2 = -8$$

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

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

REF: 081936aii