A.REI.B.4: Solving Quadratics 10

1   What is the solution set of the equation $x^2 + 9 = 0$?
 1) $\{3,-3\}$
 2) $\{3i,-3i\}$
 3) $\{-3,-3i\}$
 4) $\{\ \}$

2   Express, in terms of i, the roots of the equation $\frac{2}{3}x^2 + 18 = 0$.

3   Max solves a quadratic equation by completing the square. He shows a correct step:
$$(x+2)^2 = -9$$
What are the solutions to his equation?
 1) $2 \pm 3i$
 2) $-2 \pm 3i$
 3) $3 \pm 2i$
 4) $-3 \pm 2i$

4   The roots of the equation $x^2 - 4x + 9 = 0$ are
 1) $2 \pm i\sqrt{5}$
 2) $2 \pm \sqrt{5}$
 3) $2 \pm i\sqrt{13}$
 4) $2 \pm \sqrt{13}$

5   Solve for x in simplest $a + bi$ form: $x^2 + 8x + 25 = 0$

6   In physics class, Taras discovers that the behavior of electrical power, x, in a particular circuit can be represented by the function $f(x) = x^2 + 2x + 7$. If $f(x) = 0$, solve the equation and express your answer in simplest $a + bi$ form.

7   Solve the equation $x^2 = 6x - 12$ and express the roots in simplest $a + bi$ form.

8   Express, in simplest $a + bi$ form, the roots of the equation $x^2 + 5 = 4x$.

9   Find the roots of the equation $x^2 + 7 = 2x$ and express your answer in simplest $a + bi$ form.

10   Solve the equation $x^2 - 4x = -13$ and express the roots in the form $a + bi$.

11   Express the roots of the equation $x^2 = 2x - 5$ in $a + bi$ form.

12   Solve the equation $x^2 = 4x - 20$ and express your answers in the form $a + bi$.

13   Solve the equation $x^2 - 4x = -10$ and express the roots in terms of i.

14   Solve the equation $6x - 34 = x^2$ and express the roots in simplest $a + bi$ form.

15   Solve for x and express the roots in simplest $a + bi$ form: $x^2 = 6x - 10$

16   Solve for x and express your answer in simplest $a + bi$ form: $x^2 + 29 = 4x$

17   Solve for x and express your answer in simplest $a + bi$ form: $x^2 - 10x = -41$

18   Solve the equation $x(x - 2) + 2 = 0$, and express the roots in the form $a + bi$.

19   Express the roots of the equation $x^2 + 1 = 8(x - 3)$ in $a + bi$ form.

20   Express the roots of the equation $x^2 + 1 = 4(x - 1)$ in $a + bi$ form.

21   Express the roots of the equation $2x^2 + 4x + 5 = 0$ in simplest $a + bi$ form.

22   Solve for x and express in simplest $a + bi$ form: $3x^2 - 6x + 4 = 0$

23   Solve for x and express your answer in simplest $a + bi$ form: $\frac{x^2}{4} = x - 2$

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Answer Section

1 ANS: 2   REF: 080234siii
2 ANS:

$\pm 3i\sqrt{3}$

REF: 069041siii

3 ANS: 2

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

$x + 2 = \pm\sqrt{-9}$

$x = -2 \pm 3i$

REF: 011408a2

4 ANS: 1   REF: 088422siii
5 ANS:

$x^2 + 8x = -25$

$x^2 + 8x + 16 = -25 + 16$

$(x+4)^2 = -9$

$x + 4 = \sqrt{-9}$

$x = -4 \pm 3i$

REF: 010222b

6 ANS:

$x^2 + 2x = -7$

$x^2 + 2x + 1 = -7 + 1$

$(x+1)^2 = -6$

$x + 1 = \sqrt{-6}$

$x = -1 \pm i\sqrt{6}$

REF: 010627b

7 ANS:

$$x^2 - 6x = -12 \qquad . \ .$$

$$x^2 - 6x + 9 = -12 + 9$$

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

$$x - 3 = \sqrt{-3}$$

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

REF: fall9928b

8 ANS:

$$x^2 - 4x = -5$$

$$x^2 - 4x + 4 = -5 + 4$$

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

$$x - 2 = \sqrt{-1}$$

$$x = 2 \pm i$$

REF: 080328b

9 ANS:

$$x^2 - 2x = -7$$

$$x^2 - 2x + 1 = -7 + 1$$

$$(x - 1)^2 = -6$$

$$x - 1 = \sqrt{-6}$$

$$x = 1 \pm i\sqrt{6}$$

REF: 010931b

10 ANS:
$2 \pm 3i$

REF: 068038siii

11 ANS:
$1 \pm 2i$

REF: 088537siii

12 ANS:
$2 \pm 4i$

REF: 088637siii

13 ANS:
$2 \pm i\sqrt{6}$

REF: 088738siii

14 ANS:
$3 \pm 5i$

REF: 088937siii

15 ANS:
$3 \pm i$

REF: 019736siii

16 ANS:
$2 \pm 5i$

REF: 010339siii

17 ANS:
$5 \pm 4i$

REF: 060042siii

18 ANS:
$1 \pm i$

REF: 018737siii

19 ANS:
$4 \pm 3i$

REF: 019638siii

20 ANS:
$2 \pm i$

REF: 018942siii

21 ANS:
$-1 \pm \dfrac{\sqrt{6}}{2} i$

REF: 089939siii

22 ANS:
$1 \pm \dfrac{i\sqrt{3}}{3}$

REF: 019440siii

23 ANS:
$2 \pm 2i$

REF: 010242siii