A.REI.B.4: Solving Quadratics 4

1 Solve for x: $x^2 + 3x - 40 = 0$

2 Solve for x: $x^2 + 3x - 28 = 0$

3 Solve for x: $x^2 + 2x - 24 = 0$

4 Solve $x^2 - 9x = 36$ algebraically for all values of x.

5 Solve $x^2 - 8x - 9 = 0$ algebraically. Explain the first step you used to solve the given equation.

6 In the equation $x^2 + 10x + 24 = (x + a)(x + b)$, b is an integer. Find algebraically *all* possible values of b.

7 Solve: $(x - 3)(x + 3) = 6x - 14$

8 Solve the equation for y: $(y - 3)^2 = 4y - 12$

9 Write an equation that defines $m(x)$ as a trinomial where $m(x) = (3x - 1)(3 - x) + 4x^2 + 19$. Solve for x when $m(x) = 0$.

10 Solve: $3x^2 - 11x = 70$

11 Solve: $5x^2 - 12x = 108$

12 Solve the equation $4x^2 - 12x = 7$ algebraically for x.

13 Solve: $6x^2 + x - 1 = 0$

14 Solve: $6 - x = 12x^2$

15 Solve: $6x^2 - x - 2 = 0$

16 Solve: $8x^2 - 2x - 3 = 0$

17 Solve $6x^2 + 5x - 6 = 0$ algebraically for the exact values of x.

18 Solve $8m^2 + 20m = 12$ for m by factoring.

19 Amy solved the equation $2x^2 + 5x - 42 = 0$. She stated that the solutions to the equation were $\frac{7}{2}$ and -6. Do you agree with Amy's solutions? Explain why or why not.

20 Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$
Line 2 $0 = B^2 + 2B - 3$
Line 3 $0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x. Explain the method Janice used to solve the quadratic equation.

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

1 ANS:

$$x^2 + 3x - 40 = 0$$

–8 and 5. $(x+8)(x-5) = 0$

$$x = -8 \quad x = 5$$

REF: 089926a

2 ANS:

$$x^2 + 3x - 28 = 0$$

–7 and 4. $(x+7)(x-4) = 0$

$$x = -7 \quad x = 4$$

REF: 060229a

3 ANS:

$$x^2 + 2x - 24 = 0$$

–6,4. $(x+6)(x-4) = 0$

$$x = -6 \quad x = 4$$

REF: 010637a

4 ANS:

$x^2 - 9x - 36 = 0$

$(x-12)(x+3) = 0$

$x = 12, -3$

REF: 082329ai

5 ANS:

$x^2 - 8x - 9 = 0$ I factored the quadratic.

$(x-9)(x+1) = 0$

$x = 9, -1$

REF: 011927ai

6 ANS:

$x^2 + 10x + 24 = (x+4)(x+6) = (x+6)(x+4)$. 6 and 4

REF: 081425ai

7 ANS:

1, 5

REF: 069109al

8 ANS:

$y^2 - 6y + 9 = 4y - 12$

$y^2 - 10y + 21 = 0$

$(y - 7)(y - 3) = 0$

$y = 7, 3$

REF: 011627ai

9 ANS:

$m(x) = (3x - 1)(3 - x) + 4x^2 + 19$ $\quad x^2 + 10x + 16 = 0$

$m(x) = 9x - 3x^2 - 3 + x + 4x^2 + 19$ $\quad (x + 8)(x + 2) = 0$

$m(x) = x^2 + 10x + 16$ $\quad x = -8, -2$

REF: 061433ai

10 ANS:

$7, -\frac{10}{3}$

REF: 019805al

11 ANS:

$6, -\frac{18}{5}$

REF: 069805al

12 ANS:

$4x^2 - 12x - 7 = 0$

$(4x^2 - 14x) + (2x - 7) = 0$

$2x(2x - 7) + (2x - 7) = 0$

$(2x + 1)(2x - 7) = 0$

$x = -\frac{1}{2}, \frac{7}{2}$

REF: 011529ai

13 ANS:

$\frac{1}{3}, -\frac{1}{2}$

REF: 019607al

14 ANS:

$-\frac{3}{4}, \frac{2}{3}$

REF: 099805al

15 ANS:
$\frac{1}{3}, -\frac{1}{2}$

REF: 030005al

16 ANS:
$\frac{3}{4}, -\frac{1}{2}$

REF: 060005al

17 ANS:
$(2x+3)(3x-2)=0$

$$x = -\frac{3}{2}, \frac{2}{3}$$

REF: 062230ai

18 ANS:
$8m^2 + 20m - 12 = 0$

$4(2m^2 + 5m - 3) = 0$

$(2m-1)(m+3) = 0$

$$m = \frac{1}{2}, -3$$

REF: fall1305ai

19 ANS:
$2x^2 + 5x - 42 = 0$ Agree, as shown by solving the equation by factoring.

$(x+6)(2x-7) = 0$

$$x = -6, \frac{7}{2}$$

REF: 061628ai

20 ANS:
$0 = (B+3)(B-1)$ Janice substituted B for $8x$, resulting in a simpler quadratic. Once factored, Janice substituted

$0 = (8x+3)(8x-1)$

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

$8x$ for B.

REF: 081636ai