

ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit

3

3 - Practice

1-45

ALL EVEN

Show Sol

ODD

$$1. x^2 - 8x + 16 = 25$$

$$(x - 4)^2 = 25$$

$$x - 4 = \pm 5$$

$$x = 4 \pm 5$$

The solutions are $x = -1$ and $x = 9$.

$$3. x^2 - 18x + 81 = 5$$

$$(x - 9)^2 = 5$$

$$x - 9 = \pm\sqrt{5}$$

$$x = 9 \pm \sqrt{5}$$

The solutions are $x = 9 - \sqrt{5}$ and $x = 9 + \sqrt{5}$.

$$5. y^2 - 24y + 144 = -100$$

$$(y - 12)^2 = -100$$

$$y - 12 = \pm 10i$$

$$y = 12 \pm 10i$$

The solutions are $y = 12 - 10i$ and $y = 12 + 10i$.

$$7. 4w^2 + 4w + 1 = 75$$

$$(2w + 1)^2 = 75$$

$$2w + 1 = \pm 5\sqrt{3}$$

$$2w = -1 \pm 5\sqrt{3}$$

$$w = \frac{-1 \pm 5\sqrt{3}}{2}$$

The solutions are $w = \frac{-1 - 5\sqrt{3}}{2}$ and $w = \frac{-1 + 5\sqrt{3}}{2}$.

9. In this binomial, $b = 10$.

Step 1 Find $\left(\frac{b}{2}\right)^2$. $\left(\frac{10}{2}\right)^2 = 25$

Step 2 Add the result to $x^2 + bx$.

$$x^2 + 10x + 25 = (x + 5)^2$$

11. In this binomial, $b = -12$.

Step 1 Find $\left(\frac{b}{2}\right)^2$. $\left(\frac{-12}{2}\right)^2 = 36$

Step 2 Add the result to $y^2 + by$.

$$y^2 - 12y + 36 = (y - 6)^2$$

13. In this binomial, $b = -6$.

Step 1 Find $\left(\frac{b}{2}\right)^2$. $\left(\frac{-6}{2}\right)^2 = 9$

Step 2 Add the result to $x^2 + bx$.

$$x^2 - 6x + 9 = (x - 3)^2$$

15. In this binomial, $b = -5$.

Step 1 Find $\left(\frac{b}{2}\right)^2$. $\left(\frac{-5}{2}\right)^2 = \frac{25}{4}$

Step 2 Add the result to $z^2 + bz$.

$$z^2 - 5z + \frac{25}{4} = \left(z - \frac{5}{2}\right)^2$$

17. In this binomial, $b = 13$.

Step 1 Find $\left(\frac{b}{2}\right)^2$. $\left(\frac{13}{2}\right)^2 = \frac{169}{4}$

Step 2 Add the result to $w^2 + bw$.

$$w^2 + 13w + \frac{169}{4} = \left(w + \frac{13}{2}\right)^2$$

19. The value of c is $2 \cdot 2 = 4$; $x^2 + 4x + 4 = (x + 2)^2$.

21. $x^2 + 6x + 3 = 0$

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

$$x^2 + 6x + 9 = -3 + 9$$

$$(x + 3)^2 = 6$$

$$x + 3 = \pm\sqrt{6}$$

$$x = -3 \pm \sqrt{6}$$

The solutions are $x = -3 - \sqrt{6}$ and $x = -3 + \sqrt{6}$.

$$23. x^2 + 4x - 2 = 0$$

$$x^2 + 4x = 2$$

$$x^2 + 4x + 4 = 2 + 4$$

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

$$x + 2 = \pm\sqrt{6}$$

$$x = -2 \pm \sqrt{6}$$

The solutions are $x = -2 - \sqrt{6}$ and $x = -2 + \sqrt{6}$.

$$25. z(z + 9) = 1$$

$$z^2 + 9z = 1$$

$$z^2 + 9z + \frac{81}{4} = 1 + \frac{81}{4}$$

$$\left(z + \frac{9}{2}\right)^2 = \frac{85}{4}$$

$$z + \frac{9}{2} = \pm\frac{\sqrt{85}}{2}$$

$$z = \frac{-9 \pm \sqrt{85}}{2}$$

The solutions are $z = \frac{-9 - \sqrt{85}}{2}$ and $z = \frac{-9 + \sqrt{85}}{2}$.

$$27. 7t^2 + 28t + 56 = 0$$

$$t^2 + 4t + 8 = 0$$

$$t^2 + 4t = -8$$

$$t^2 + 4t + 4 = -8 + 4$$

$$(t + 2)^2 = -4$$

$$t + 2 = \pm 2i$$

$$t = -2 \pm 2i$$

The solutions are $t = -2 - 2i$ and $t = -2 + 2i$.

$$29. \quad 5x(x + 6) = -50$$

$$x(x + 6) = -10$$

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

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

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

$$x + 3 = \pm i$$

$$x = -3 \pm i$$

The solutions are $x = -3 - i$ and $x = -3 + i$.

$$31. \quad 4x^2 - 30x = 12 + 10x$$

$$4x^2 - 40x = 12$$

$$x^2 - 10x = 3$$

$$x^2 - 10x + 25 = 3 + 25$$

$$(x - 5)^2 = 28$$

$$x - 5 = \pm 2\sqrt{7}$$

$$x = 5 \pm 2\sqrt{7}$$

The solutions are $x = 5 - 2\sqrt{7}$ and $x = 5 + 2\sqrt{7}$.

33. Use factoring because the left-hand side factors.

$$x^2 - 4x - 21 = 0$$

$$(x - 7)(x + 3) = 0$$

$$x - 7 = 0 \quad \text{or} \quad x + 3 = 0$$

$$x = 7 \quad \text{or} \quad x = -3$$

The solutions are $x = 7$ and $x = -3$.

35. Use square roots because the equation is of the form $u^2 = d$.

$$(x + 4)^2 = 16$$

$$x + 4 = \pm 4$$

$$x = -4 \pm 4$$

The solutions are $x = -8$ and $x = 0$.

37. Use completing the square because the equation cannot be factored or written in the form $u^2 = d$.

$$x^2 + 12x + 50 = 0$$

$$x^2 + 12x = -50$$

$$x^2 + 12x + 36 = -50 + 36$$

$$(x + 6)^2 = -14$$

$$x + 6 = \pm i\sqrt{14}$$

$$x = -6 \pm i\sqrt{14}$$

The solutions are $x = -6 + i\sqrt{14}$ and $x = -6 - i\sqrt{14}$.

39. Use completing the square because the equation cannot be factored or written in the form $u^2 = d$.

$$2x^2 + 4x - 3 = 0$$

$$2x^2 + 4x = 3$$

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

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

$$2(x + 1)^2 = 5$$

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

$$x + 1 = \frac{\pm\sqrt{10}}{2}$$

$$x = -1 \pm \frac{\sqrt{10}}{2}$$

The solutions are $x = -1 - \frac{\sqrt{10}}{2}$ and $x = -1 + \frac{\sqrt{10}}{2}$.

41. Use square roots because the equation can be written in the form $u^2 = d$.

$$x^2 + 121 = 0$$

$$x^2 = -121$$

$$x = \pm 11i$$

The solutions are $x = 11i$ and $x = -11i$.

43. $y = x^2 - 8x + 19$

$$y + ? = (x^2 - 8x + ?) + 19$$

$$y + 16 = (x^2 - 8x + 16) + 19$$

$$y + 16 = (x - 4)^2 + 19$$

$$y = (x - 4)^2 + 3$$

The vertex form of the function is $y = (x - 4)^2 + 3$.

The vertex is (4, 3).

45. $g(x) = x^2 + 12x + 37$

$$g(x) + ? = (x^2 + 12x + ?) + 37$$

$$g(x) + 36 = (x^2 + 12x + 36) + 37$$

$$g(x) + 36 = (x + 6)^2 + 37$$

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

The vertex form of the function is $g(x) = (x + 6)^2 + 1$.

The vertex is $(-6, 1)$.