

Algebra 1 8.9

Factor perfect square trinomials

Solve equations involving perfect squares

Solve equations using square root property (SRP)

perfect square

zero product property

prime

square root property

eggscellent factoring

A hand-drawn diagram illustrating the formula for a perfect square trinomial. It shows two parentheses, each followed by a superscript 2, with a '2x' term between them. A curved arrow points from the first parenthesis to the second, indicating the multiplication process.

$$\left(\quad \right)^2 + 2x + \left(\quad \right)^2$$

Quiz moves to Fri.

Test Ch. 8 Mon.

$$4x^2 + 48x + 36$$

$$2x \qquad 6$$

$$(21x)(2) \quad 9x^2 + \underline{\underline{42x}} + 49$$

$$(3x + 7)^2$$

$$x = \pm 3$$

Examples 3-4 Solve each equation.

$$7. 4x^2 = 36$$

$$-36 \quad -36$$

$$4x^2 - 36 = 0$$

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

$$2x + 6 = 0 \quad 2x - 6 = 0$$

$$2x = -6 \quad 2x = 6$$

Can you write it as a perfect square?

$$x = -3 \quad x = 3$$

$$8. 25a^2 - 40a = -16$$

$$+16 \quad +16$$

$$25a^2 - 40a + 16 = 0$$

$$(5a - 4)^2 = 0$$

$$(5a - 4)(5a - 4) = 0$$

$$\downarrow$$

$$5a - 4 = 0$$

$$5a = 4 \quad a = \frac{4}{5}$$

SRP $\sqrt{\quad} \quad \sqrt{\quad}$

9. $64y^2 - 48y + 18 = 9$

~~$32y^2 - 24y + 9 = 0$~~

10. $\sqrt{(z+5)^2} = \sqrt{47}$

$z+5 = (6.8556)^2$

$(-6.8556)^2$

$z+5 = 6.8556 \quad z = 1.9$

$z+5 = -6.8556 \quad z = -11.9$

$\sqrt{(x-3)^2} = \sqrt{19}$

$x-3 = \pm 4.35889$

$x-3 = 4.35889$

$+3 \quad +3$

$x = 7.4$

$x-3 = -4.35889$

$+3 \quad +3$

$x = -1.4$

What if it isn't a perfect square?

Examples 3–4 Solve each equation.

34. $4m^2 - 24m + 36 = 0$

$$(2m - 6)^2 = 0$$

$$(2m - 6)(2m - 6) = 0$$

↓

$$2m - 6 = 0$$

$$\frac{2m}{2} = \frac{6}{2}$$

$$m = 3$$

35. $\sqrt{(y - 4)^2} = \sqrt{7}$

$$y - 4 = \begin{matrix} + \\ - \end{matrix} 2.6457$$

$$y - 4 = 2.6457$$

$$\begin{array}{r} +4 \quad +4 \\ \hline y = 6.6 \end{array}$$

$$y - 4 = -2.6457$$

$$\begin{array}{r} +4 \quad +4 \\ \hline y = 1.4 \end{array}$$

What if it isn't a perfect square?

SRP +

38. $x^2 + 8x + 16 = 25$

$$\sqrt{(x+4)^2} = \sqrt{25}$$

$$x+4 = \pm 5$$

$$\begin{array}{r} x+4=5 \\ -4 \quad -4 \\ \hline x=1 \end{array}$$

$$\begin{array}{r} x+4=-5 \\ -4 \quad -4 \\ \hline x=-9 \end{array}$$

$$(x+5)^2 = 0$$

$$(x+5)(x+5) = 0$$

39. $5x^2 - 60x = -180$

$$5x^2 - 60x + 180 = 0$$

$$5(x^2 - 12x + 36) = 0$$

$$5(x - 6)^2 = 0$$

$$5(x-6)(x-6) = 0$$

$$\begin{array}{l} x-6=0 \\ +6 \quad +6 \\ \hline x=6 \end{array}$$

$$x=6$$

$$\begin{array}{r} 18 \\ \hline 1 \ 18 \\ \hline 2 \ 9 \\ 3 \ 6 \end{array}$$

$$(3b+1)(2b+3)$$

Easter eggs

$$6b^2 + 11b + 3$$

$$(6b^2 + 2b) + (9b + 3)$$

$$2b(3b+1) + 3(3b+1)$$