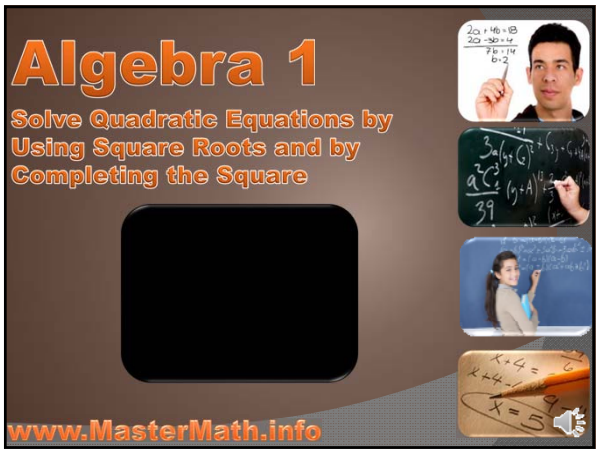
Algebra 1
Solve Quadratic Equations by Using Square Roots and by Completing the Square
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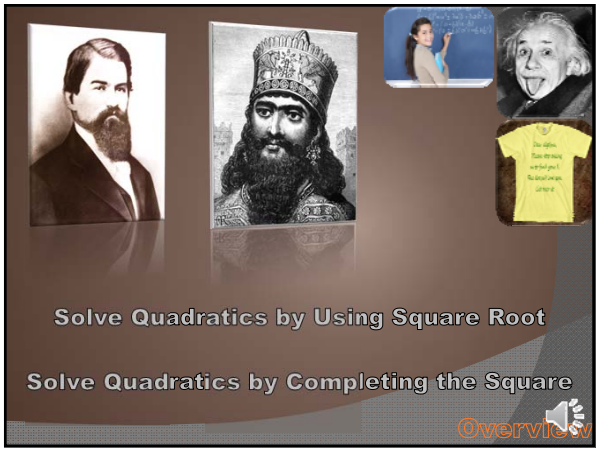
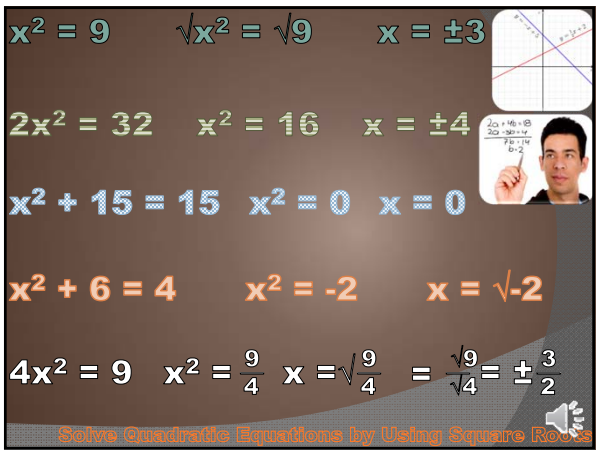

Solve Quadratics by Using Square Root
Solve Quadratics by Completing the Square
Overview


x² = 9 √x² = √9 x = ±3
2x² = 32 x² = 16 x = ±4
x² + 15 = 15 x² = 0 x = 0
x² + 6 = 4 x² = -2 x = √-2
4x² = 9 x² = 9/4 x = √9/4 = √9/√4 = ± 3/2
Solve Quadratic Equations by Using Square Roots

Solve: $15 = 3(z + 5)^2$

$5 = (z + 5)^2$

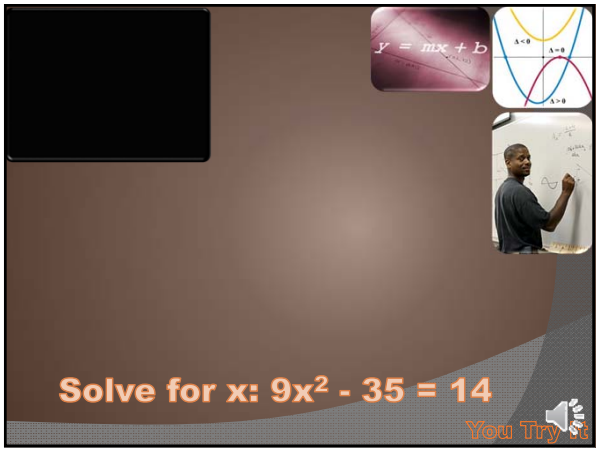
$\sqrt{5} = z + 5$

$-5 + \sqrt{5} = z \quad \sqrt{5} - 5 = z$

$-5 \pm 2.24 \approx z$

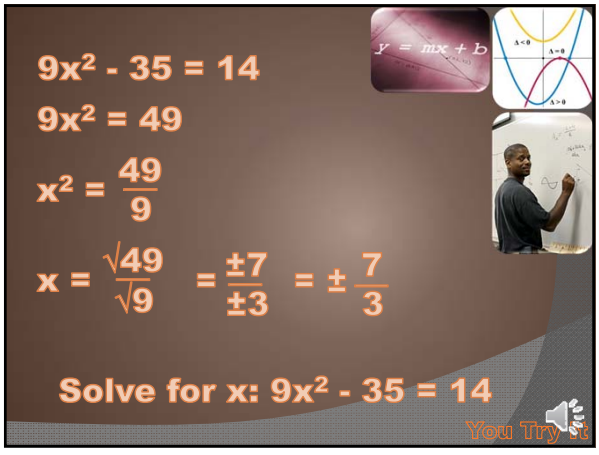
-7.24 and $-2.76 \approx z$

Solve Quadratic Equations by Using Square Roots



Solve for x: $9x^2 - 35 = 14$

You Try It



$9x^2 - 35 = 14$

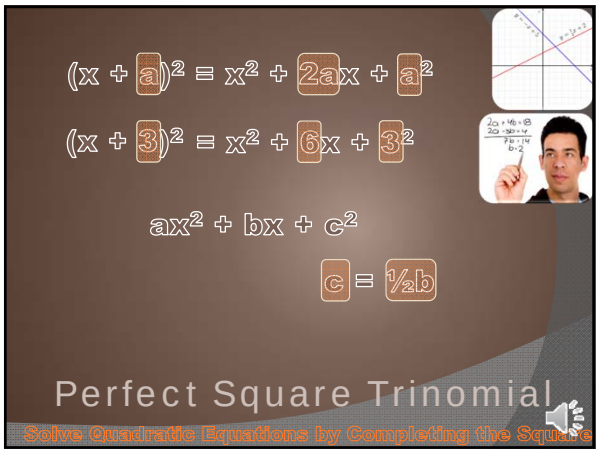
$9x^2 = 49$

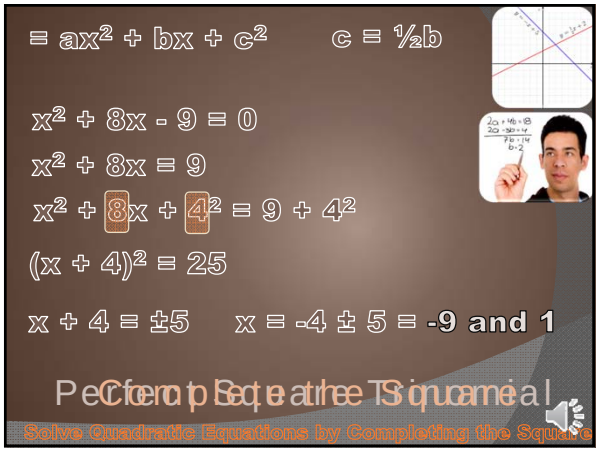
$x^2 = \frac{49}{9}$

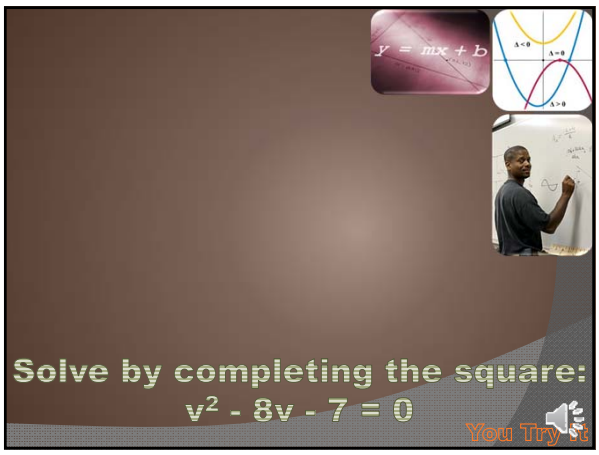
$x = \frac{\sqrt{49}}{\sqrt{9}} = \frac{\pm 7}{\pm 3} = \pm\frac{7}{3}$

Solve for x: $9x^2 - 35 = 14$

You Try It


$(x + a)^2 = x^2 + 2ax + a^2$
$(x + 3)^2 = x^2 + 6x + 3^2$
$ax^2 + bx + c^2$
$c = \frac{1}{2}b$
Perfect Square Trinomial
Solve Quadratic Equations by Completing the Square


$= ax^2 + bx + c^2$ $c = \frac{1}{2}b$
$x^2 + 8x - 9 = 0$
$x^2 + 8x = 9$
$x^2 + 8x + 4^2 = 9 + 4^2$
$(x + 4)^2 = 25$
$x + 4 = \pm 5$ $x = -4 \pm 5 = -9$ and 1
Perfect Square Trinomial
Complete the Square
Solve Quadratic Equations by Completing the Square


$y = mx + b$
Solve by completing the square:
$v^2 - 8v - 7 = 0$
You Try It

$v^2 - 8v - 7 = 0$

$v^2 - 8v = 7$

$v^2 - 8v + \left(\frac{-8}{2}\right)^2 = 7 + \left(\frac{-8}{2}\right)^2$

$v^2 - 8v + 16 = 7 + 16$

$(v - 4)^2 = 23$

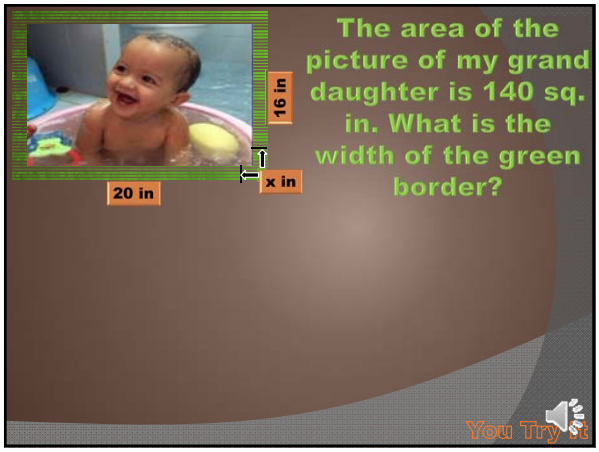
$v - 4 = \sqrt{23}$

$v = 4 \pm \sqrt{23} \approx 4 \pm 4.8 \approx 8.8, -.8$

Solve by completing the square:

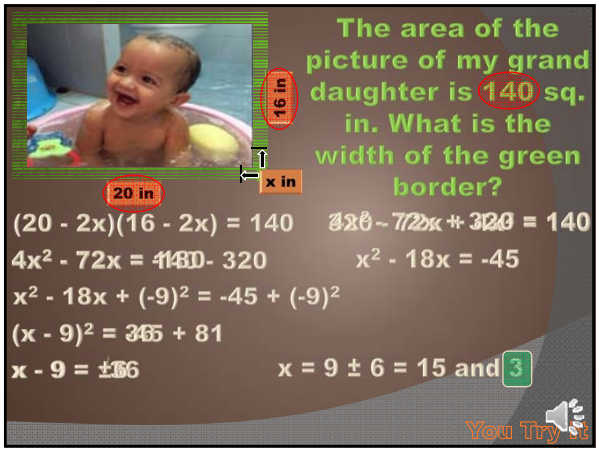
$v^2 - 8v - 7 = 0$

You Try It



The area of the picture of my grand daughter is 140 sq. in. What is the width of the green border?

You Try It



The area of the picture of my grand daughter is 140 sq. in. What is the width of the green border?

$(20 - 2x)(16 - 2x) = 140$

$320 - 72x + 4x^2 = 140$

$4x^2 - 72x = 140 - 320$

$x^2 - 18x = -45$

$x^2 - 18x + (-9)^2 = -45 + (-9)^2$

$(x - 9)^2 = -45 + 81$

$x - 9 = \pm 6$

$x = 9 \pm 6 = 15$ and 3

You Try It