

Honors Algebra II



MATH, ENGINEERING, AND SCIENCE ACADEMY

Unit 2 – Quadratic Expressions & Equations

Solving Quadratic Equations

Name: The Best

CHOOSE which level you want to work on! Try at least one problem from each ☺

I'm warming up (Level 2)	I'm warming up (Level 3)	I'm ready for a challenge (Level 4)
<p>Find the roots of $f(x) = r^2 - 8r - 48$</p> $0 = r^2 - 8r - 48$ $0 = (r + 4)(r - 12)$ <p> $r + 4 = 0 \implies r = -4$ $r - 12 = 0 \implies r = 12$ </p> <p>For this problem you could've also completed the square <u>OR</u> used the quadratic formula.</p>	<p>Find the solutions</p> $p^2 + 14p - 28 = 0$ $p = \frac{-14 \pm \sqrt{(14)^2 - 4(1)(-28)}}{2(1)}$ $p = \frac{-14 \pm \sqrt{308}}{2}$ $p = \frac{-14 \pm 17.5499}{2}$ <p> $p = \frac{-14 + 17.5499}{2} \implies p \approx 1.775$ $p = \frac{-14 - 17.5499}{2} \implies p \approx -15.775$ </p> <p>For this problem we can't factor because no two numbers multiply to -28 and add up to 14.</p>	<p>Solve by completing the square</p> $x^2 + 2 = 10x - 7$ $-10x + 7 \quad -10x + 7$ $x^2 - 10x + 9 = 0$ $(x^2 - 10x + 25) - 25 + 9 = 0$ $(x - 5)(x - 5) - 16 = 0$ $(x - 5)^2 - 16 = 0$ $+16 \quad +16$ $\sqrt{(x - 5)^2} = \sqrt{16}$ $x - 5 = \pm 4$ <p> $x - 5 = 4 \implies x = 9$ $x - 5 = -4 \implies x = 1$ </p> <p>Make sure the equation is set equal to zero. Then, specifically I'm asking you to complete the sq.</p>



I'm warming up (Level 2)	I'm right on target (Level 3)	I'm ready for a challenge (Level 4)
<p>Find the solutions</p> $6x^2 - 48 = -12x$ $+12x \quad +12x$ $6x^2 + 12x - 48 = 0$ $\frac{6}{6}(x^2 + 2x - 8) = \frac{0}{6}$ $x^2 + 2x - 8 = 0$ $(x + 4)(x - 2) = 0$ $\begin{array}{l} x + 4 = 0 \\ -4 \quad -4 \\ \hline x = -4 \end{array} \quad \begin{array}{l} x - 2 = 0 \\ +2 \quad +2 \\ \hline x = 2 \end{array}$	<p>Find the zeros</p> $2a^2 = -6 + 8a$ $+6 - 8a$ $2a^2 - 8a + 6 = 0$ $\frac{2}{2}(a^2 - 4a + 3) = \frac{0}{2}$ $a^2 - 4a + 3 = 0$ $(a - 3)(a - 1) = 0$ $\begin{array}{l} a - 3 = 0 \\ +3 \quad +3 \\ \hline a = 3 \end{array} \quad \begin{array}{l} a - 1 = 0 \\ +1 \quad +1 \\ \hline a = 1 \end{array}$	<p>Use the quadratic formula</p> $x^2 + 19x + 89 = -9 - x$ $+x \quad +9 \quad +9 \quad +x$ $x^2 + 20x + 98 = 0$ $x = \frac{-20 \pm \sqrt{(20)^2 - 4(1)(98)}}{2(1)}$ $x = \frac{-20 \pm \sqrt{8}}{2}$ $x = \frac{-20 \pm 2.8284}{2}$ $x = \frac{-20 + 2.8284}{2} \quad x = \frac{-20 - 2.8284}{2}$ $x \approx -8.586 \quad x \approx -11.414$

Always GCF where you can!!!

Since we're solving equations, you can divide the GCF out.

Order matters

When finding a, b and c, Be careful!!!