Individual Quiz 1
Thursday Feb 6th
Solving Quadratic Equations

Key

Instructions

Solve each quadratic equation using the specified method. Show all your work.

1. Factor the binomial to solve: $x^2 + 7x = 0$

   $x(x+7)=0$ By zero product property $x=0$, $x=-7$

2. Factor to solve: $x^2 - 5x - 14 = 0$

   $a \cdot b = -14$
   $a+b=-5$
   use $14 = 2 \cdot 7$

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

   $x=7$ $x=-2$

3. Use the square root property to solve: $2(x+1)^2 = 18$

   first divide by 2

   $(x+1)^2 = 18/2$

   $(x+1)^2 = 9 \Rightarrow \sqrt{(x+1)^2} = \pm\sqrt{9} \Rightarrow x+1 = \pm 3$

   $x+1=3$, $x=2$

   $x+1=-3$, $x=-4$

4. Use the quadratic formula to solve: $x^2 + 3x - 9 = 0$

   $a=1$, $b=3$, $c=-9$

   $x = \dfrac{-3 \pm \sqrt{3^2-4(1)(-9)}}{2} \Rightarrow x = \dfrac{-3 \pm \sqrt{45}}{2} = \dfrac{-3 \pm 3\sqrt{5}}{2}$

5. Complete the square to solve: $x^2 + 6x - 7 = 0$

   $x^2+6x = 7$

   $x^2+6x+\left(\frac{6}{2}\right)^2 = 7+\left(\frac{6}{2}\right)^2$

   $x^2+6x+9 = 7+9$

   $(x+3)^2 = 16$

   $\sqrt{(x+3)^2} = \pm\sqrt{16} \rightarrow x+3 = \pm 4$

   - $x+3=4$, $x=1$
   - $x+3=-4$, $x=-7$