Solving by Completing the Square

Aug 7-9:43 AM

Solving Quadratic Equations by Completing the Square

1. Move the constant to the other side.
2. Add $\left(\frac{b}{2}\right)^2$ to **BOTH** sides of the equation.
3. Factor! Write as binomial squared: ( )^2
4. Take the square root of both sides.
5. Solve for x.
6. Check your answers!!!

Aug 7-9:44 AM

Solve each equation. $ax^2+bx+c=0$

1. $x^2-10x+54=0$

$\left(\frac{-10}{2}\right)^2$

$x^2-10x=-54$

$x^2-10x+25=-54+25$

$(x-5)(x-5)=$

$\sqrt{(x-5)^2}=\sqrt{-29}$

$x-5=\pm i\sqrt{29}$

$x=5\pm i\sqrt{29}$

Aug 7-9:45 AM

2. $x^2-18x+85=0$

$x^2-18x+81=-85+81$

$\left(-\frac{18}{2}\right)^2$ $(x-9)(x-9)$

$\sqrt{(x-9)^2}=\sqrt{-4}$

$x-9=\pm 2i$

$x=9\pm 2i$

Aug 7-9:46 AM

3. $x^2+20x-73=0$

$\left(\frac{20}{2}\right)^2$

$x^2+20x+100=73+100$

$\sqrt{(x+10)^2}=\sqrt{173}$

$x+10=\pm\sqrt{173}$

$x=-10\pm\sqrt{173}$

Aug 7-9:46 AM

4. $x^2+6x+90=8$

$x^2+6x+9=-82+9$

$(x+3)^2=-73$

$x+3=\sqrt{-73}$

$x=-3\pm i\sqrt{73}$

Aug 7-9:46 AM

3. $\frac{4x^2+32x+16}{4} = \frac{0}{4}$

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

$(\frac{8}{2})^2$ $x^2+8x+16 = -4+16$

$\sqrt{(x+4)^2} = \sqrt{12}$

$\sqrt{4}\sqrt{3}$

$x+4 = \pm 2\sqrt{3}$

$x = -4 \pm 2\sqrt{3}$

Aug 8-9:43 AM

5. $x^2 - 10x - 56 = 6$

Aug 7-9:47 AM

6. $x^2 - 14x + 75 = -8$

Aug 7-9:47 AM

7. $x^2 - 8x + 36 = 0$

Aug 7-9:47 AM

Find the value of c that completes the square.

1) $p^2 - 28p + c$

2) $x^2 + 18x + c$

Aug 7-11:47 AM

3) $x^2 + 28x + c$

Aug 7-10:52 AM

4) $x^2 + 30x + c$

Aug 7-11:47 AM

5) $x^2 - 22x + c$

Aug 7-11:47 AM

6) $p^2 - 10p + c$

Aug 7-11:48 AM

7) $x^2 + 8x + c$

Aug 7-11:48 AM

8) $r^2 - 20r + c$

Aug 7-11:48 AM

9) $p^2 - 2p + c$

Aug 7-11:48 AM

10) $n^2 + 42n + c$

Aug 7-11:48 AM

11) $x^2 - \frac{2}{5}x + c$

Aug 7-11:49 AM

12) $p^2 - 5p + c$

Aug 7-11:49 AM

13) $n^2 - 19n + c$

Aug 7-11:49 AM

14) $n^2 + 15n + c$

Aug 7-11:49 AM

Solve each equation by completing the square.

1) $k^2 - 14k - 32 = 0$

Aug 7-11:49 AM

2) $a^2 - 12a - 45 = 0$

Aug 7-11:49 AM

3) $r^2 + 2r + 22 = 0$

Aug 7-11:50 AM

4) $n^2 + 10n - 24 = 0$

Aug 7-11:50 AM

5) $8p^2 - 16p - 42 = 0$

Aug 7-11:50 AM

6) $x^2 - 14x - 20 = 0$

Aug 7-11:50 AM

7) $n^2 - 4n - 45 = 0$

Aug 7-11:50 AM

8) $6b^2 + 12b + 71 = 7$

Aug 7-11:50 AM

9) $8b^2 + 16b + 61 = 8$

Aug 7-11:51 AM

10) $3a^2 - 6a + 64 = 2$

Aug 7-11:51 AM

11) $3b^2 + 12b - 27 = 6$

Aug 7-11:51 AM

12) $5p^2 + 10p - 18 = -3$

Aug 7-11:51 AM

13) $8r^2 - 16r + 17 = 7$

Aug 7-11:51 AM

14) $2n^2 + 8n + 14 = 8$

Aug 7-11:51 AM

Aug 7-11:48 AM