

Classwork + HW 9

Kuta Software - Infinite Algebra 1

Complete the square for each equation!

Name _____

Date _____ Period _____

Solving Equations by Completing the Square

Solve each equation by completing the square.

1) $a^2 + 2a - 3 = 0$
 $\quad \quad \quad +3 \quad +3$
 $a^2 + 2a + 1 = 3 + 1$
 $a^2 + 2a + 1 = 3 + 1$
 $(a+1)(a+1) = 4$
 $\quad \quad \quad = (a+1)^2 = 4$

a	1
a	1
a ²	a

~~a~~
~~2a~~

2) $a^2 - 2a - 8 = 0$
 $\quad \quad \quad +8 \quad +8$
 $a^2 - 2a + 1 = 8 + 8$
 $a^2 - 2a + 1 = 8 + 8$
 $(a-1)^2 = 16$
 $\quad \quad \quad = (a-1)^2 - 16 = 0$

-a	1
a ²	-a

~~-a~~
~~-2a~~
~~a²~~

3) $p^2 + 16p - 22 = 0$
 $\quad \quad \quad +22 \quad +22$
 $p^2 + 16p + 64 = 22 + 64$
 $(p+8)(p+8) = 22 + 64$
 $(p+8)^2 = 86$
 $\quad \quad \quad -86 \quad -86 = (p+8)^2 - 86 = 0$

p	8
8p	64
p ²	8p

~~8p~~
~~16p~~

4) $k^2 + 8k + 12 = 0$
 $\quad \quad \quad -12 \quad -12$
 $k^2 + 8k + 16 = -12 + 16$
 $(k+4)(k+4) = 4$
 $\quad \quad \quad = (k+4)^2 - 4 = 0$

k	4
4k	16
k ²	4k

~~4k~~
~~8k~~
~~k²~~

5) $r^2 + 2r - 33 = 0$
 $\quad \quad \quad +33 \quad +33$
 $r^2 + 2r + 1 = 33 + 1$
 $r^2 + 2r + 1 = 34$
 $(r+1)(r+1) = 34$
 $\quad \quad \quad = (r+1)^2 - 34 = 0$

r	1
r	1
r ²	r

~~r~~
~~2r~~

6) $a^2 - 2a - 48 = 0$
 $\quad \quad \quad +48 \quad +48$
 $a^2 - 2a + 1 = 48 + 48$
 $a^2 - 2a + 1 = 96$
 $(a-1)^2 = 96$
 $\quad \quad \quad -96 \quad -96 = (a-1)^2 - 96 = 0$

-a	1
a ²	-a

~~-a~~
~~-2a~~
~~a²~~

7) $m^2 - 12m + 26 = 0$

8) $x^2 + 12x + 20 = 0$

9) $k^2 - 8k - 48 = 0$

10) $p^2 + 2p - 63 = 0$

11) $m^2 + 2m - 48 = -6$

12) $p^2 - 8p + 21 = 6$