

Solving Quadratic Equations Using Different Methods

Solve each equation by taking square roots.

1) $10a^2 - 10 = 630$
 $10a^2 = 640$
 $a^2 = 64$
 $a = \pm 8$

2) $3k^2 + 4 = 130$
 $3k^2 = 126$
 $k^2 = 42$
 $k = \pm \sqrt{42}$

3) $6x^2 + 1 = 121$
 $6x^2 = 120$
 $x^2 = 20$
 $x = \pm 2\sqrt{5}$

4) $-10 - 3a^2 = -310$
 $-3a^2 = -300$
 $a^2 = 100$
 $\sqrt{a^2} = \pm \sqrt{100}$
 $a = \pm 10$

Solve each equation by factoring.

5) $x^2 - 8x + 15 = 0$
 $(x-3)(x-5) = 0$
 $x = 3$ $x = 5$

6) $x^2 - 8x + 7 = 0$
 $(x-7)(x-1) = 0$
 $x = 7$ $x = 1$

7) $p^2 + 12p + 32 = 0$
 $(p+4)(p+8) = 0$
 $p = -4$ $p = -8$

8) $x^2 + 2x = 0$
 $x(x+2) = 0$
 $x = 0$ $x = -2$

Solve each equation with the quadratic formula.

9) $6a^2 + 8a - 25 = -3$
 $6a^2 + 8a - 22 = 0$
 $a = b$
 $b = 8$
 $c = -22$
 $x = \frac{-8 \pm \sqrt{(8)^2 - 4(6)(-22)}}{2(6)} = \frac{-8 \pm 4\sqrt{37}}{12}$

10) $8b^2 + 11b - 11 = 6$
 $8b^2 + 11b - 17 = 0$
 $a = 8$ $b = 11$ $c = -17$
 $x = \frac{-11 \pm \sqrt{11^2 - 4(8)(-17)}}{2(8)}$

11) $4n^2 - 9n - 18 = 6$
 $4n^2 - 9n - 24 = 0$
 $a = 4$
 $b = -9$
 $c = -24$
 $x = \frac{9 \pm \sqrt{9^2 - 4(4)(-24)}}{2(4)} = \frac{9 \pm 4\sqrt{45}}{8}$

12) $10n^2 - 11n - 15 = -7$
 $10n^2 - 11n - 8 = 0$
 $a = 10$ $b = -11$ $c = -8$
 $x = \frac{11 \pm \sqrt{(-11)^2 - 4(10)(-8)}}{2(10)}$

Solve each equation by completing the square.

13) $v^2 - 12v + 21 = 10$
 $v^2 - 12v + 36 = -11 + 36$
 $(v-6)^2 = 25$
 $v-6 = \pm 5$
 $v = \pm 5 + 6 = 11 + 1$

14) $a^2 + 16a + 6 = 7$
 $a^2 + 16a + 64 = 1 + 64$
 $(a+8)^2 = 65$
 $a+8 = \pm \sqrt{65}$
 $a = \pm \sqrt{65} - 8$

15) $n^2 + 18n + 21 = 4$
 $n^2 + 18n + 81 = -17 + 81$
 $(n+9)^2 = 64$
 $n+9 = \pm 8$
 $n = \pm 8 - 9 = -1 + -17$

16) $x^2 + 12x + 2 = -10$
 $x^2 + 12x + 36 = -12 + 36$
 $(x+6)^2 = 24$
 $x+6 = \pm \sqrt{24}$
 $x = \pm 2\sqrt{6} - 6$