

Quadratic Formula Practice

Solve each equation with the quadratic formula.

1) $5x^2 - 10x + 5 = 0$
 $x = \frac{10 \pm \sqrt{10^2 - 4(5)(5)}}{2(5)}$
 $x = \frac{10 \pm \sqrt{100 - 100}}{10}$
 $x = 1 \pm 0$
 $x = 1$

3) $10a^2 - 3a - 3 = 0$

5) $11n^2 + 3n - 2 = -4$

$x = \frac{-6 \pm \sqrt{36 - 4(4)(-23)}}{2(4)}$
 $36 + 368$

2) $4m^2 + 6m - 23 = 0$
 $m = \frac{-6 \pm \sqrt{36 + 368}}{8}$
 404
 $4 \quad 101$
 $2 \quad 2$
 $-\frac{6 \pm \sqrt{404}}{8} = -\frac{6 \pm 2\sqrt{101}}{8}$
 $-\frac{3 \pm \sqrt{101}}{4}$

4) $9k^2 - 3k + 1 = 0$
 $k = \frac{3 \pm \sqrt{9 - 4(9)(1)}}{2(9)}$
 $3 \pm \sqrt{27}$
 $\frac{3 \pm \sqrt{27}}{18}$
 $\frac{1 \pm \sqrt{3}i}{6}$
 $2 \quad 7$
 $3 \quad 3$

6) $6x^2 + 0x - 21 = 0$
 $x = \frac{0 \pm \sqrt{0 - 4(6)(-21)}}{2(6)}$
 504
 $2 \quad 252$
 $12 \quad 2$
 $2 \cdot 3 \sqrt{2 \cdot 7}$
 $6 \sqrt{14} = \frac{\sqrt{14}}{2}$
 $21 \quad 3$
 $7 \quad 3$

1

7) $8p^2 + 3p + 12 = 3$
 $8p^2 + 3p + 9 = 0$

$$x = \frac{-3 \pm \sqrt{9 - (4 \cdot 8 \cdot 9)}}{16}$$

$$x = \frac{-3 \pm \sqrt{-279}}{16} \quad x = \frac{-3 \pm \sqrt{279}i}{16}$$

9) $5a^2 - 32 = -12a$

Handwritten notes: $-3 \pm \frac{3\sqrt{31}i}{16}$ (circled), $\frac{9}{3} = 3$ (circled), $\frac{31}{3}$

8) $6b^2 + 10b + 5 = 10$
 $6b^2 + 10b - 5 = 0$

$$x = \frac{-10 \pm \sqrt{100 - 4(6)(-5)}}{12}$$

$$\frac{-10 \pm \sqrt{220}}{12} = \frac{-10 \pm 2\sqrt{55}}{12}$$

10) $5k^2 - k = 15$

Handwritten notes: $\frac{-5 \pm \sqrt{55}}{6}$ (circled), $220 = 22 \cdot 10 = 2 \cdot 11 \cdot 2 \cdot 5$

11) $3a^2 = 3a + 60$

12) $11r^2 = 5$

13) $6r^2 - 4r = -8$
 $r = \frac{4 \pm \sqrt{4^2 - 4(6)(-8)}}{2(6)} = \frac{4 \pm \sqrt{-176}}{12}$
 $= \frac{4 \pm 4\sqrt{11}i}{12} = \frac{1 \pm \sqrt{11}i}{3}$

15) $2x^2 + 3 = 7x$

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    graph TD
      176 --- 2_1[2]
      176 --- 88
      88 --- 2_2[2]
      88 --- 44
      44 --- 2_3[2]
      44 --- 22
      22 --- 2_4[2]
      22 --- 11
    
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14) $m^2 + 5m - 8 = 12m$

16) $v^2 - 111 = -11$

Answers to Quadratic Formula Practice

1) $\{1\}$

2) $\left\{\frac{-3 + \sqrt{101}}{4}, \frac{-3 - \sqrt{101}}{4}\right\}$

3) $\left\{\frac{3 + \sqrt{129}}{20}, \frac{3 - \sqrt{129}}{20}\right\}$

4) $\left\{\frac{1 + i\sqrt{3}}{6}, \frac{1 - i\sqrt{3}}{6}\right\}$

5) $\left\{\frac{-3 + i\sqrt{79}}{22}, \frac{-3 - i\sqrt{79}}{22}\right\}$

6) $\left\{\frac{\sqrt{14}}{2}, -\frac{\sqrt{14}}{2}\right\}$

7) $\left\{\frac{-3 + 3i\sqrt{31}}{16}, \frac{-3 - 3i\sqrt{31}}{16}\right\}$

8) $\left\{\frac{-5 + \sqrt{55}}{6}, \frac{-5 - \sqrt{55}}{6}\right\}$

9) $\left\{\frac{8}{5}, -4\right\}$

10) $\left\{\frac{1 + \sqrt{301}}{10}, \frac{1 - \sqrt{301}}{10}\right\}$

11) $\{5, -4\}$

12) $\left\{\frac{\sqrt{55}}{11}, -\frac{\sqrt{55}}{11}\right\}$

13) $\left\{\frac{1 + i\sqrt{11}}{3}, \frac{1 - i\sqrt{11}}{3}\right\}$

14) $\{8, -1\}$

15) $\left\{3, \frac{1}{2}\right\}$

16) $\{10, -10\}$