

Quadratic Equations with Imaginary Roots

Date _____ Period _____

Simplify.

1) $\sqrt{-112}$

2) $\sqrt{-294}$

3) $\sqrt{24}$

4) $\sqrt{-252}$

5) $\sqrt{320}$

6) $\sqrt{-64}$

Solve each equation with the quadratic formula.

7) $10n^2 - n - 8 = 0$

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

9) $2r^2 + 2r + 6 = 0$

10) $11r^2 - 5r - 12 = 7$

11) $-14 + a = -3a^2$

12) $-5 = 11b^2 - 2b$

13) $3n^2 + 10n = -12 - 8n^2 + 10n$

14) $r^2 - 2r - 4 = 2r^2 + 8$

Find the discriminant of each quadratic equation then state the number and type of solutions.

15) $-4m^2 + 4m - 1 = 0$

16) $10n^2 - 2n = 0$

17) $-7a^2 + 10a - 15 = -5$

18) $-4r^2 - 4r - 8 = -7$

19) $3x^2 + 2x = 1$

20) $5n^2 - 3n - 1 = -3$

Answers to Quadratic Equations with Imaginary Roots (ID: 1)

- 1) $4i\sqrt{7}$ 3) $2\sqrt{6}$ 5) $8\sqrt{5}$
- 7) $\left\{\frac{1 + \sqrt{321}}{20}, \frac{1 - \sqrt{321}}{20}\right\}$ 9) $\left\{\frac{-1 + i\sqrt{11}}{2}, \frac{-1 - i\sqrt{11}}{2}\right\}$ 11) $\left\{2, -\frac{7}{3}\right\}$
- 13) $\left\{\frac{2i\sqrt{33}}{11}, -\frac{2i\sqrt{33}}{11}\right\}$ 15) 0; one real solution 17) -180; two imaginary solutions
- 19) 16; two real solutions