

## 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