

Use the discriminant to determine the number of real solutions to each equation.

1) $3x^2 + 8x = 3$

2) $4x^2 - 6x + 12 = 7$

3) $-4x^2 - 4x - 3 = -9$

4) $-2x^2 + 4x + 6 = 8$

Solve the following by quadratic formula.

5) $8x^2 + 6x - 3 = 0$

6) $x^2 + 3x + 2 = 0$

7) $3x^2 - 3x - 11 = -5$

8) $2x^2 - 7x = -5$

Solve the following by completing the square.

9) $x^2 + 16x - 17 = 0$

10) $x^2 - 18x + 67 = 0$

11) $x^2 + 16x + 11 = -4$

12) $x^2 - 4x - 50 = 2$

Solve the following by factoring.

13) $2x^2 - 7x + 5 = 0$

14) $2x^2 + x - 6 = 0$

15) $3x^2 - 2x - 5 = 0$

16) $2x^2 - 9x + 4 = 0$

Solve the following by square root both sides.

17) $4x^2 + 11 = 12$

18) $2x^2 - 92 = 0$

19) $5x^2 - 15 = 45$

20) $-2x^2 + 50 = 10$

Simplify the following.

21) $\sqrt{40x^4y^3}$

22) $\sqrt{96x^5y^6}$

23) $\sqrt{144x^2y^7}$

24) $\sqrt{60x^3y^2}$