

| <i>Method</i> | <i>Advantages</i> | <i>Disadvantages</i> | <i>Examples</i> |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Factoring & Zero-Factor Property | It can be very fast. When each factor is set equal to zero, the resulting equations are usually easy to solve. | Some polynomials may be difficult to factor and others impossible. | $x^2 - 2x - 24 = 0$ $4a^2 - a = 0$ |
| Square Root Property | It is the fastest way to solve equations of the form $(ax + b)^2 = n$ or $ax^2 = n$ ($n = \text{number}$). | It only applies to equations that are in these forms. | $x^2 = 27$ $(2y + 3)^2 = 25$ |
| Completing the Square | It can be used to solve any quadratic equation. It works well with equations of the form $x^2 + bx = n$ (b is even). | It involves more steps than the other methods. The algebra can be hard if the leading coefficient is not 1. | $x^2 + 4x + 1 = 0$ $t^2 - 14t - 9 = 0$ |
| Quadratic Formula | It can be used to solve any quadratic equation. | It involves several computations where sign errors can be made. Often the result must be simplified. | $x^2 + 3x - 33 = 0$ $4s^2 - 10s + 5 = 0$ |

Strategy for Solving Quadratic Equations:

1. See whether the equation is in a form such that the **square root method** is easily applied.
2. See whether the equation is in a form such that the **completing the square method** is easily applied.
3. If neither Step 1 nor Step 2 is reasonable, write the equation in $\mathbf{ax^2 + bx + c = 0}$ form.
4. See whether the equation can be solved using the **factoring method**.
5. If you can't factor, solve the equation by the **quadratic formula**.