

Quadratic Formula Example

Math 130 *Kovitz*

Solve for x .

$$x^2 + x = 1.25.$$

Decide on a method of solution. Then either leave the x terms isolated on the left side (if completing the square) or set the right side to 0 (if factoring or using the quadratic formula).

Do not divide both sides by the coefficient after factoring out an x . That's definitely not correct; it is not a linear equation, so methods for solving a linear equation are not applicable.

It is always a good idea to check the solutions in the *original* equation, using a calculator if necessary.

$$x^2 + x - 1.25 = 0.$$

The coefficient of the x term is not an even integer, so try using the quadratic formula, as factoring may not work in this case.

The first step is to get the right side of the equation to be 0.

$$x = \frac{-1 \pm \sqrt{1^2 - 4(1)(-1.25)}}{2} = \frac{-1 \pm \sqrt{6}}{2}. \quad a = 1, b = 1, \text{ and } c = -1.25.$$

$$x = \frac{-1 + \sqrt{6}}{2} \quad \text{or} \quad x = \frac{-1 - \sqrt{6}}{2}.$$

Check the answers.

Use approximate six-digit decimals. So the answers are 0.724745 and -1.724745 .

$$(0.724745)^2 + 0.724745 = 1.250000.$$

It checks.

and

$$(-1.724745)^2 + (-1.724745) = 1.250000.$$

So, both answers check. Use of a calculator is recommended in this case, as the radical forms are messy to check because of the fractions.