How to find the x-intercepts (FIXED)

Step 1. Try to factor the quadratic by either,

- Difference of Squares factoring.
- Simple factoring.
- Non-Simple factoring.

Step 2. IF the Difference of squares factoring worked, then the x-intercepts will be,

$$x_1 = -\frac{\sqrt{|c|}}{\sqrt{|a|}}, \quad x_2 = \frac{\sqrt{|c|}}{\sqrt{|a|}}.$$

Step 3. ELSE IF Simple factoring worked, then the x-intercepts will be,

$$x_1 = -q, \quad x_2 = -p.$$

Step 4. ELSE IF Non-Simple factoring worked,

- **IF** $a \cdot q > 0$, then the x-intercepts will be,

$$x_1 = -\frac{k}{t}, \quad x_2 = -\frac{p}{a}.$$

- **ELSE IF** $a \cdot q < 0$, then the x-intercepts will be,

$$x_1 = \frac{k}{t}, \quad x_2 = -\frac{p}{a}.$$

Step 5. ELSE You will have to resort to the quadratic formula (Which happens to work either way, even if you were just lazy and wanted to use it).

Proceed by solving,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

From there you will obtain two solutions as your x-intercepts, and your done!

1 Notion of Solving Quadratic Equations

Given a quadratic,

$$f(x) = ax^2 + bx + c.$$

When we ask you to **solve the quadratic**, we mean find the solutions to,

$$0 = ax^2 + bx + c.$$

The solutions will be the x-intercepts to the original quadratic $f(x)$.

Practice Problems:

All of these problems are from the textbook so you can check your answers from there.

Question 1. Textbook, pg 49 Question 1.

Question 2. Textbook, pg 49 Question 3.

Question 3. Textbook, pg 49 Question 5.