Quadratic Equations

Quadratic Formula

To solve a standard quadratic equation like:

$$a\,x^2 + by + c = 0$$

we can use the quadratic formula:

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

For example, solve this equation:

$$2\,x^2 + 9\,x + 4 = 0$$

Substitute : a=2   b=9   c=4

$$x = \frac{-9 \pm \sqrt{(9)^2 - 4(2)(4)}}{2(2)}$$

$$x = \frac{-9 \pm \sqrt{81 - 32}}{4}$$

$$x = \frac{-9 \pm \sqrt{49}}{4}$$

$$x = \frac{-9 \pm 7}{4}$$

$$x = \frac{-9 + 7}{4} \text{ or } \frac{-9 - 7}{4}$$

$$x = \frac{-1}{2} \text{ or } -4$$

Or we can write 2 solutions like this:

$$x_1 = \frac{-1}{2}, x_2 = -4$$

or we could use SET notation :

$$x \in \left\{ -\frac{1}{2}, -4 \right\}$$

Graphical Solution

Another way to solve an equation is to draw it's GRAPH and look for ROOTS, where it crosses the x-axis.
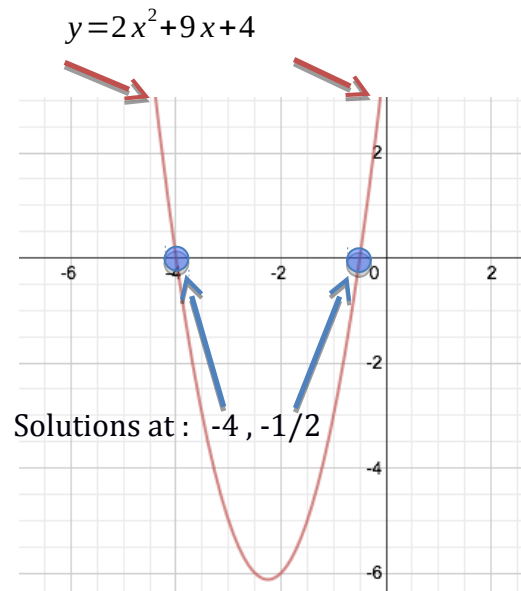
You might use a GRAPHING CALCULATOR to draw the graph.

Then you could use your SmartPhone to take a photo of the graph and paste it into your document. (NO! Don't!)

There are good computer tools for drawing graphs – for example
  www.desmos.com/calculator

Draw the graph. Use [Shift Cmd 4] to take a "screen capture" (photo) of the graph. Now INSERT PHOTO from file (from your desktop).

$$y = 2\,x^2 + 9\,x + 4$$

Solutions at : -4 , -1/2

Format the photo to "Behind Text". Finally, decorate the graph with arrows, text, highlights, etc – all of these are on top of the photo – format shapes "In Front of Text" so they appear in front of the photo.