

November 15<sup>th</sup>

One root of a quadratic equation is

$$\frac{1 + \sqrt{3}}{2}$$

Find the equation.

The other root is  $\frac{1 - \sqrt{3}}{2}$

If the equation is  $ax^2 + bx + c = 0$ , by inspection

$$a = 1, b = -1$$

$$b^2 - 4ac = 3$$

$$\therefore 1 - 4c = 3$$

$$\text{Hence } c = -\frac{1}{2}$$

Therefore the equation is

$$x^2 - x - \frac{1}{2} = 0$$

Or with integer coefficients

$$\mathbf{2x^2 - 2x - 1 = 0}$$