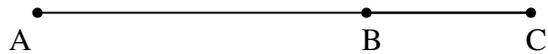


The golden ratio



1. A line AC is said to have been divided in the golden ratio by B if $AC : AB = AB : BC$.



Suppose $BC=1$ and $AB = x$. Write the equation in algebraic terms.

2. If you were asked to find the value of the golden ratio using algebra, what quadratic equation would you have to solve? (*just write down the equation*)

3. Using your calculator, solve this equation graphically to find an **approximate value** of the golden ratio.

4. Use algebra to solve the equation you found in (2) in two different ways to find the **exact value** of the golden ratio.

(i) By completing the squares

(ii) By any other algebraic method of your choice (*name the method and perform it*)

5. Check your answers with the values given by the GSP.