

# The Golden Section

**History:** The number  $\tau = \frac{1+\sqrt{5}}{2}$  is called the **golden ratio** or **golden section**; it is discussed in detail in **Book XIII** of **Euclid's Elements**. (This book, as well as **Book X**, was probably written by **Theaetetus** in **390 B.C.**, a century before Euclid).

-probably already studied by the **Babylonians** and **Egyptians**: in the (probable) original measurements of the **Great Pyramid at Gizeh** in Egypt (built around **2600 B.C.**), the ratio of the length of the face to  $\frac{1}{2}$  its height is  $186.4m : 115.2m = 1.61806\dots$ , which is very close to  $\tau = 1.61803\dots$

-important in the **art and architecture** of the **Greeks**.

-**Fra Luca Pacioli** (**15<sup>th</sup>** century) wrote a whole book about  $\tau$  called **De divina proportione** (= Of divine proportion); it was illustrated by drawings of models made by his friend **Leonardo da Vinci** (**1452–1519**).

-**name** comes from the **property** that if  $A, B, C$  are points on a line such that  $AB : BC = AC : AB$ , then we have  $AC = \tau AB$ .

