

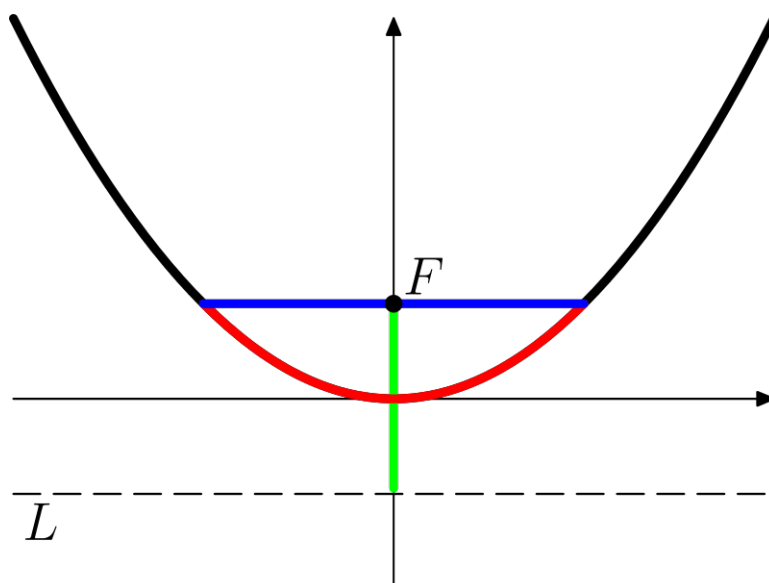
Universal parabolic constant

The universal parabolic constant is a mathematical constant . It is defined as the ratio, for any parabola, of the arc length of the parabolic segment formed by the latus rectum to the focal parameter; the focal parameter is twice the focal length. The ratio is denoted P . In the diagram, the latus rectum is pictured in blue, the parabolic segment that it forms in red and the focal parameter in green. (The focus of the parabola is the point F and the directrix is the line L .)[1]

The value of P is

$$P = \ln(1 + \sqrt{2}) + \sqrt{2} = 2.29558714939 \dots$$

The circle and parabola are unique among conic sections in that they have a universal constant; the analogous ratios for ellipses and hyperbolas depend on their eccentricities. This means that all circles are similar and all parabolas are similar, whereas ellipses and hyperbolas are not.



Definitions -

The **latus rectum** of a conic section is the chord through a focus parallel to the conic section directrix (Coxeter 1969). " **Latus rectum**" is a compound of the Latin **latus**, meaning "side," and **rectum**, meaning "straight." Half the **latus rectum** is called the semilatus **rectum**.

REFERENCES

[1 Weisstein, Eric W. "Latus Rectum." From *MathWorld*—A Wolfram Web Resource. <http://mathworld.wolfram.com/LatusRectum.html>