The quadrature of the circle (Figure 1.7)

1. Construct a quadratric—this area equals to that of the original rectangle.

2. We now claim that the shaded square having side length $AB$ is equal to the area of the square constructed on the hypotenuse $BC$.

3. Therefore, we have just constructed—a square equal to that of the original rectangle.

4. Construct a quadratric—this area equals to that of the original rectangle.

5. We now claim that the shaded square having side length $AB$ is equal to the area of the square constructed on the hypotenuse $BC$.

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Hippocrates' Quadrature of the Lune

We now move to the following very general situation.

This completes the quadrature of the rectangle of \( \triangle ABCD \). This is the rectangle's area, so we have proven the construction of a rectangle with the square equal to the shaded square which we constructed with compass and straightedge, and this completes the quadrature of a rectangle, which was our goal.

Consequently, we have proved that the original rectangle area

\[
\text{Area} = \rho = \beta - \gamma
\]

by the observation above.

\[
\Delta = \frac{\rho}{2} = (q + p)(q - p)\text{, since we constructed,}
\]

\[
\times (\beta) = (\rho) \times (\beta) = \text{base} \times (\text{height})
\]

\[
\text{Area} = \frac{\rho}{2} = \Delta
\]

or the construction above. Therefore, we can quadrature the lune, or the region between the circle and the triangle, by constructing a line equal to the height of the triangle. This is a right triangle because the height is a right triangle. The lune's area is then the difference between the circle's area and the triangle's area.

To verify this claim requires a bit of effort, for normal cone.