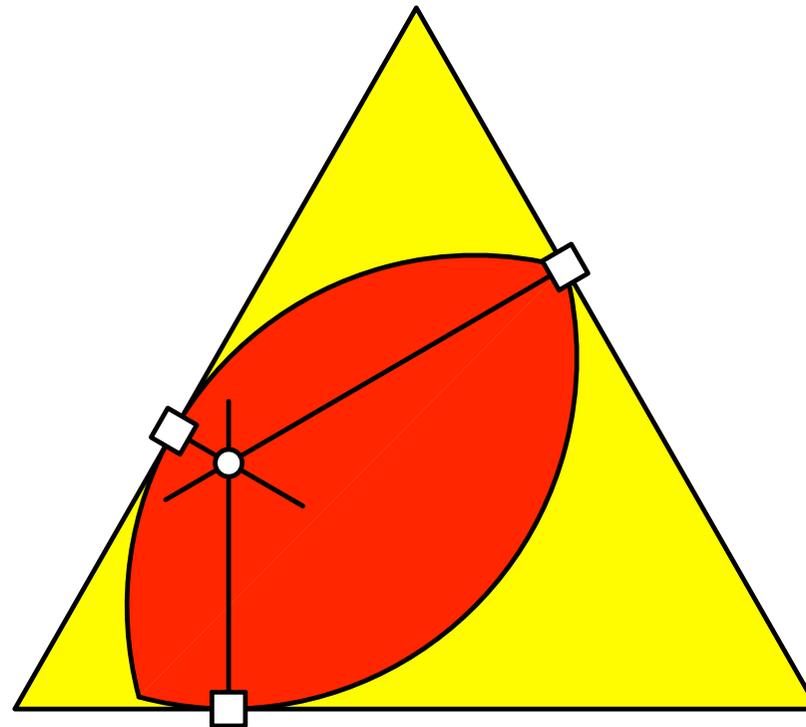


Hans Walser

Reuleaux-Zweiecke



www.walser-h-m.ch/hans

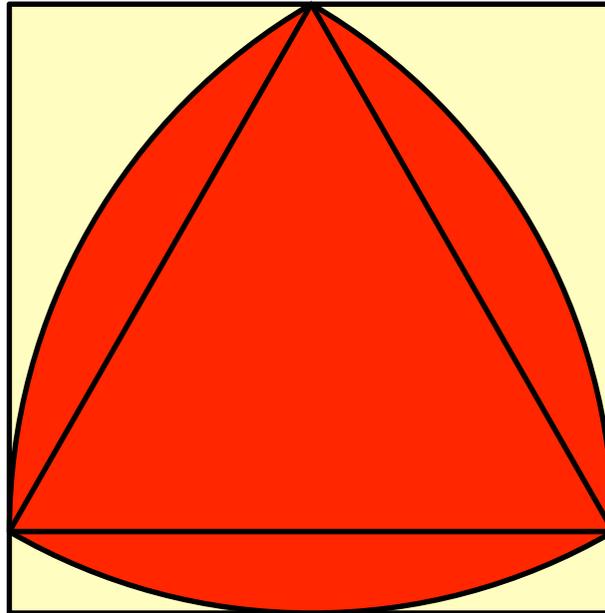
Hans Walser

Reuleaux-Zweiecke

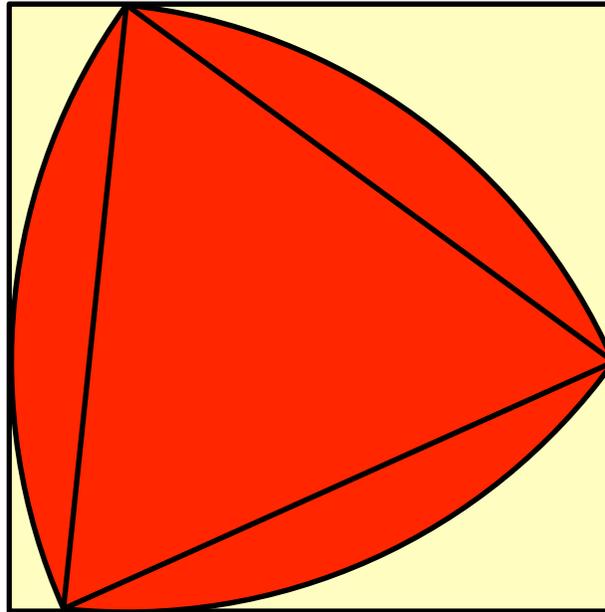
- Kinematische Geometrie
- Visuelles Beweisen
- Referenzsysteme

www.walser-h-m.ch/hans

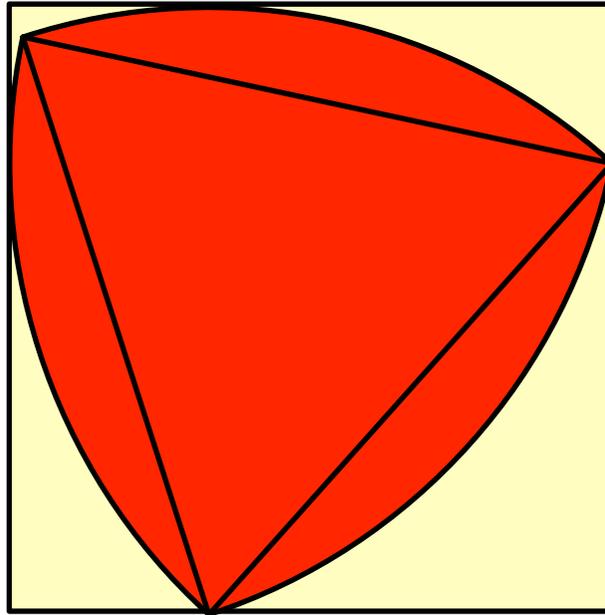
Ein alter Bekannter: Reuleaux-Dreieck



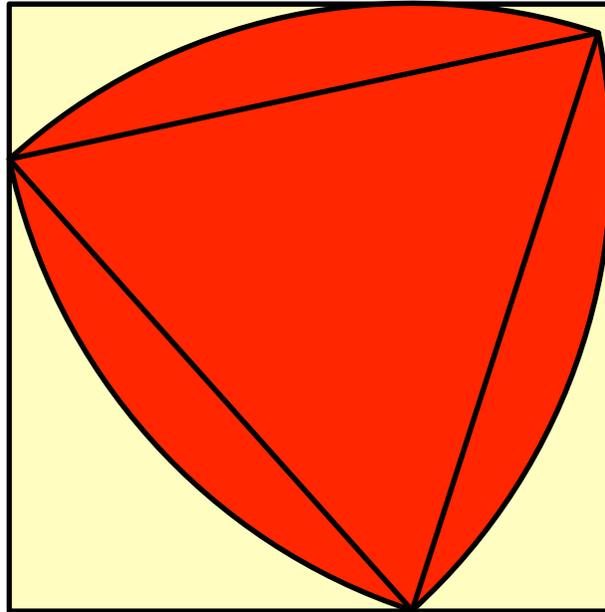
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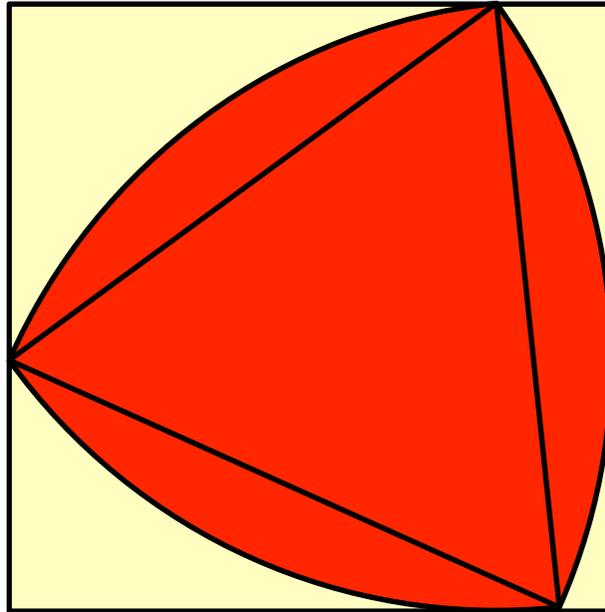
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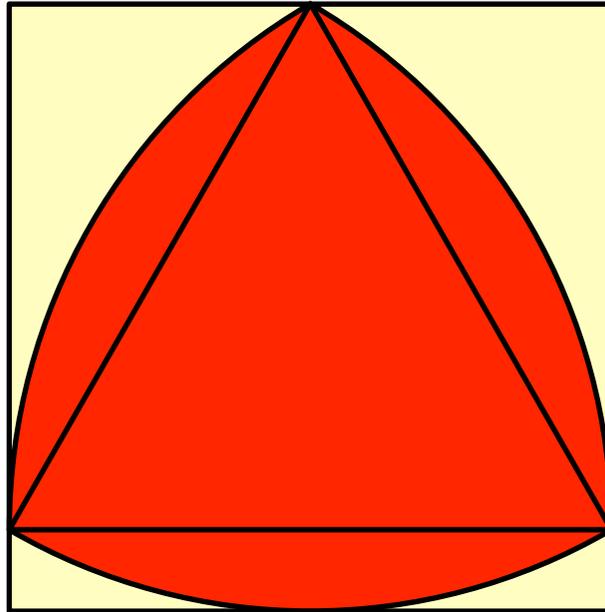
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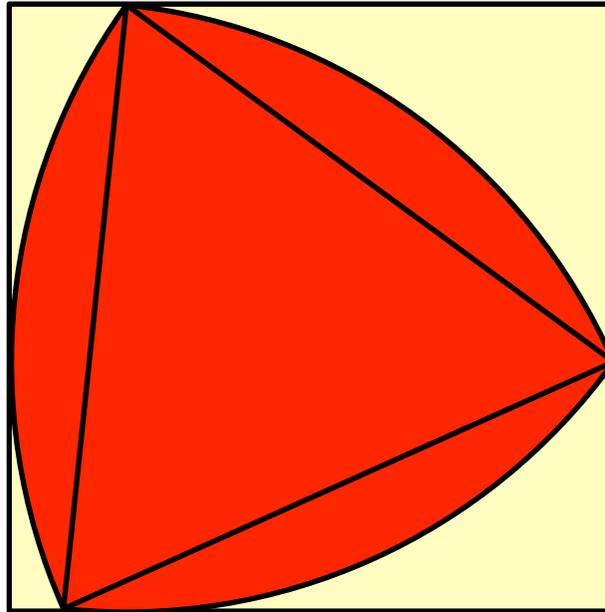
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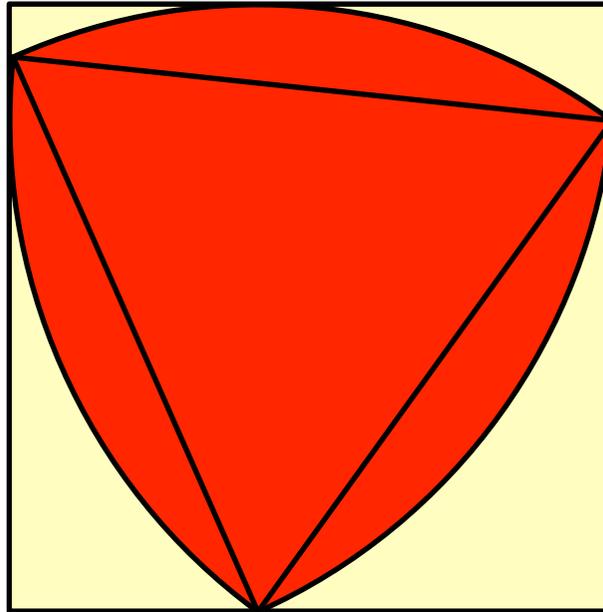
Ein alter Bekannter: Reuleaux-Dreieck



Ein alter Bekannter: Reuleaux-Dreieck



Ein alter Bekannter: Reuleaux-Dreieck



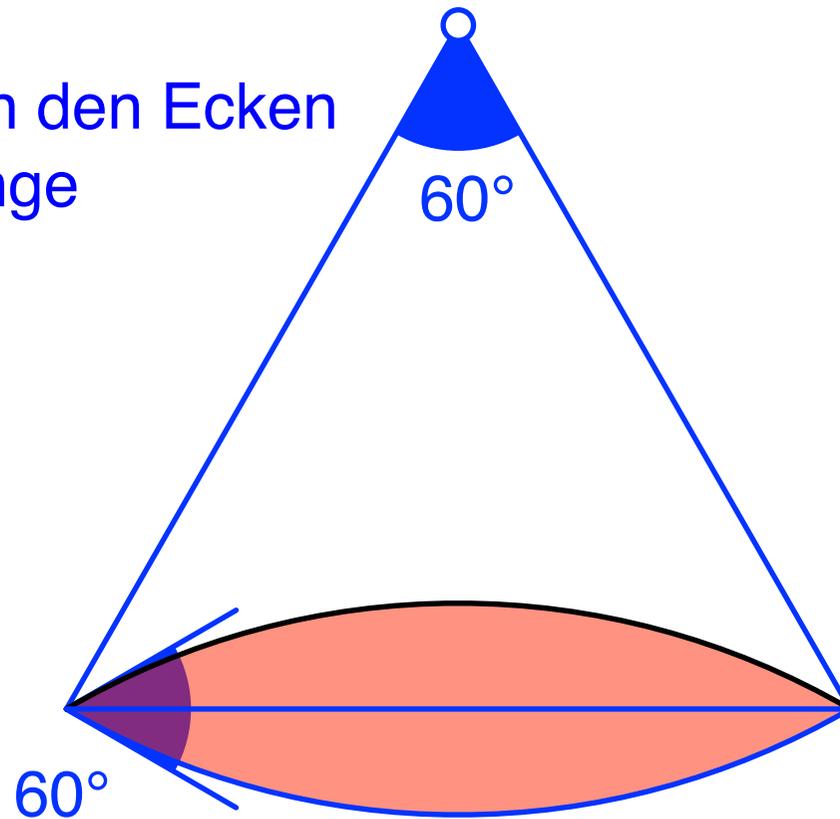
Franz Reuleaux

- *1829 Eschweiler-Pumpe
- 1850-52 Studium Polytechnische Hochschule Karlsruhe
- 1852-54 Studium Universitäten Berlin und Bonn
- 1856-64 Eidg. Polytechnikum Zürich (ETH Zürich)
- 1864-96 Königl. Gewerbe-Institut Berlin (TU Berlin)
- +1905

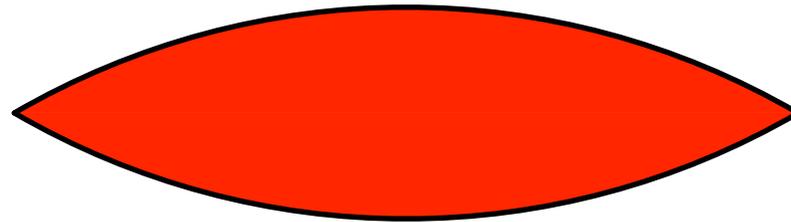
Reuleaux-Zweieck

60°-Winkel:

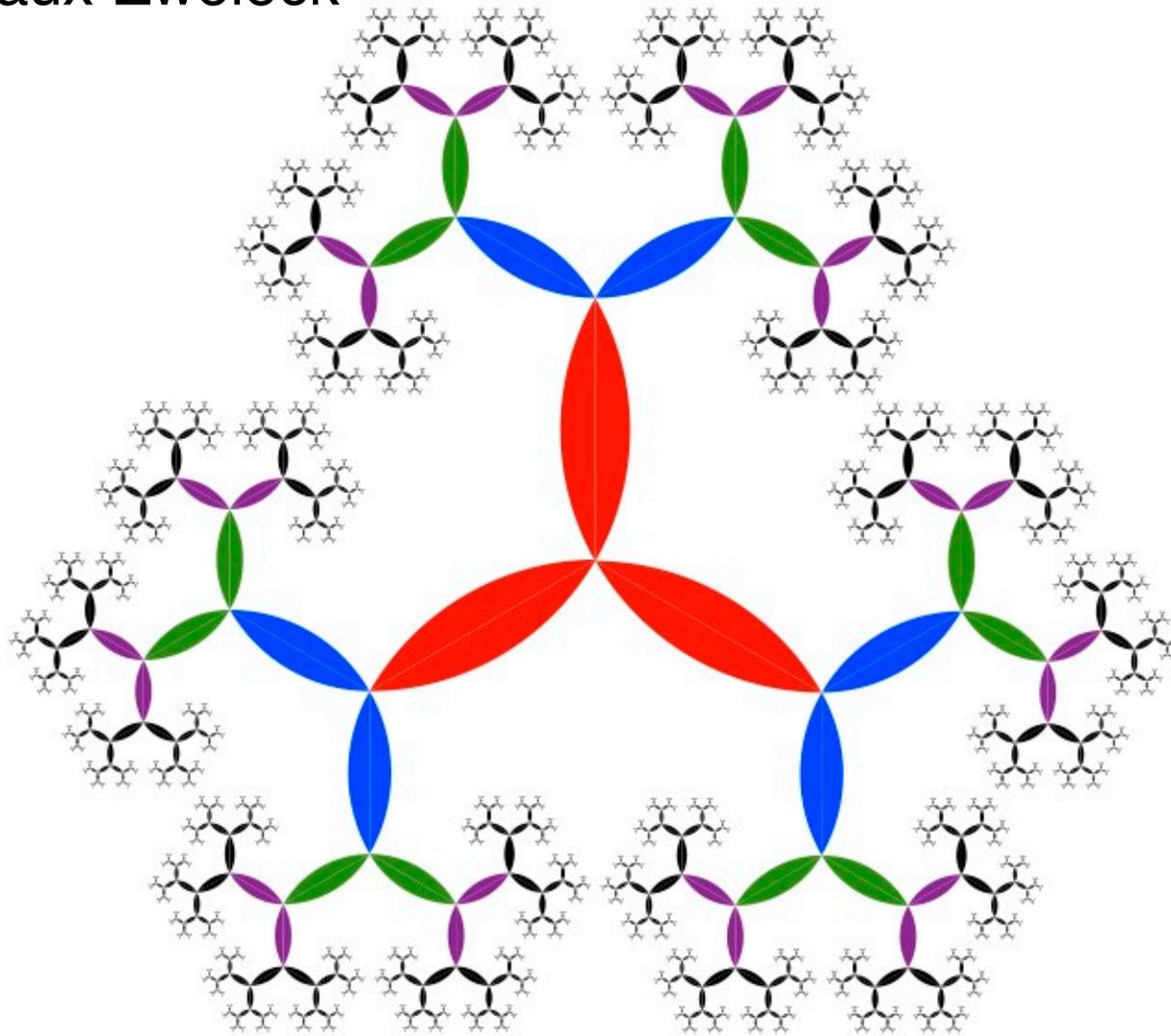
- Winkel an den Ecken
- Bogenlänge



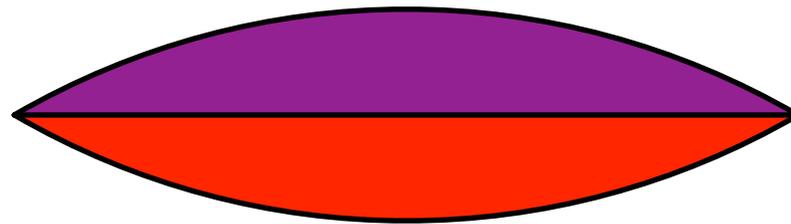
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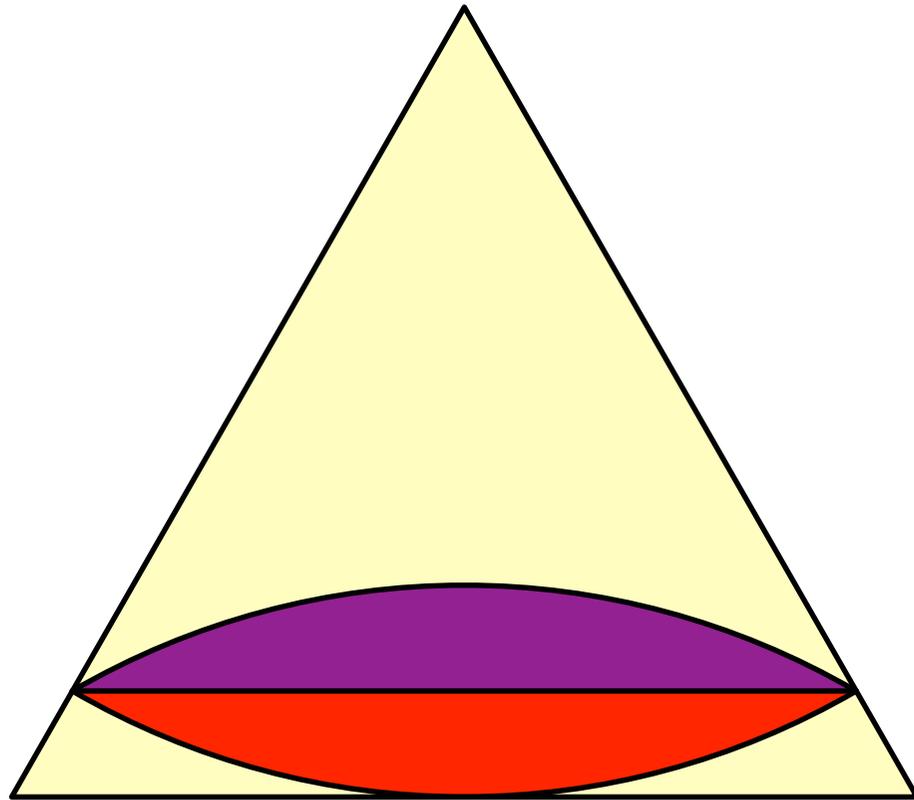
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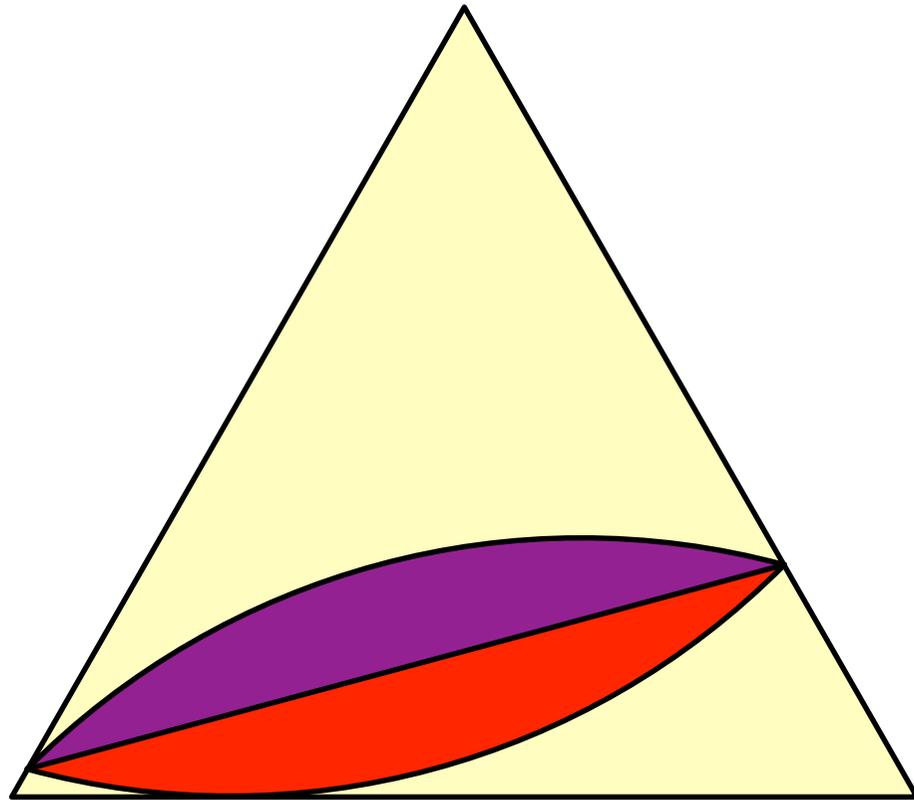
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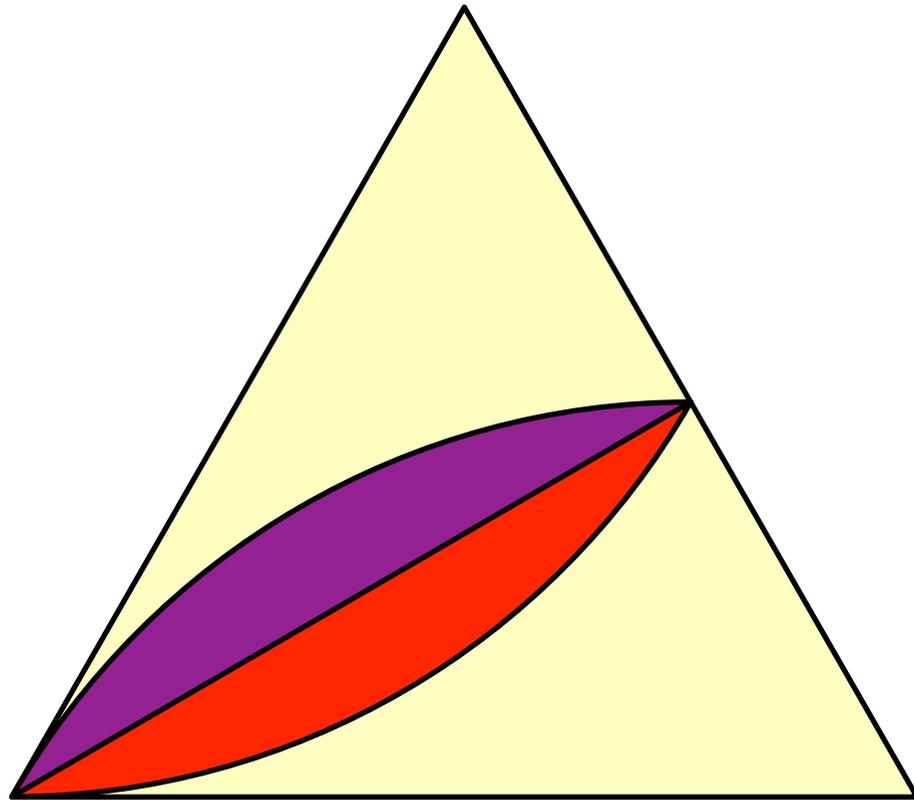
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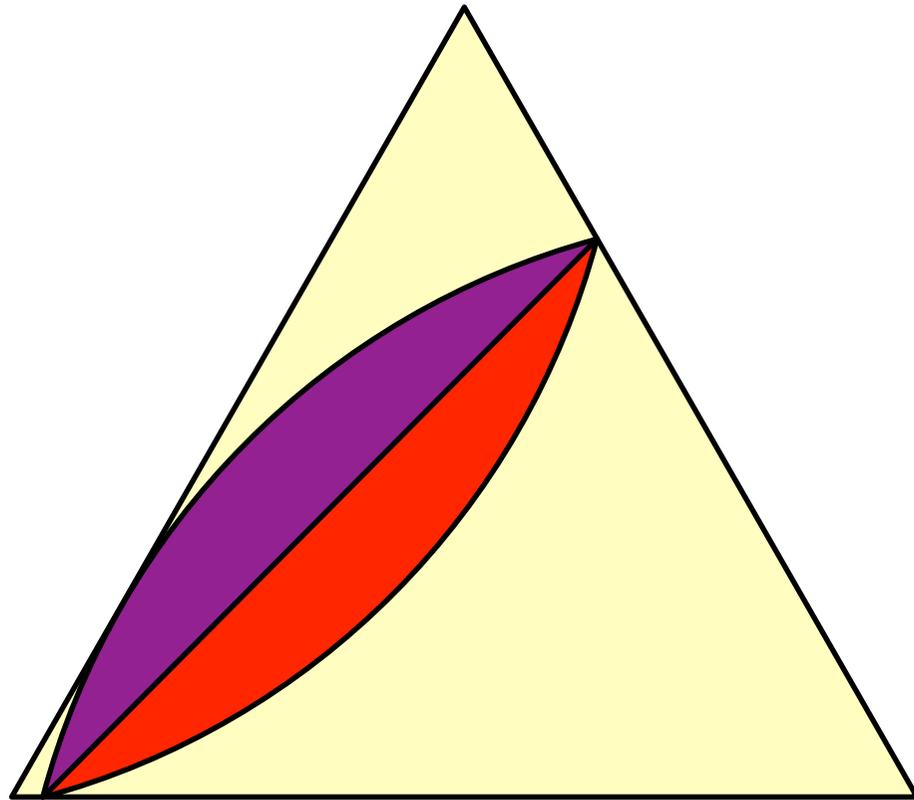
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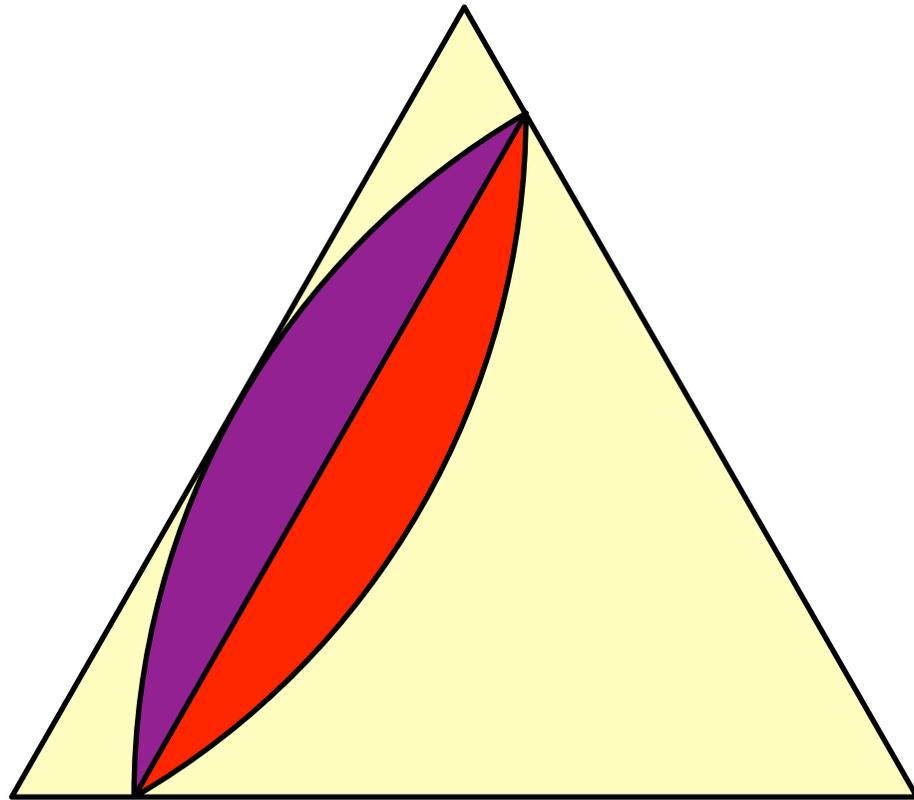
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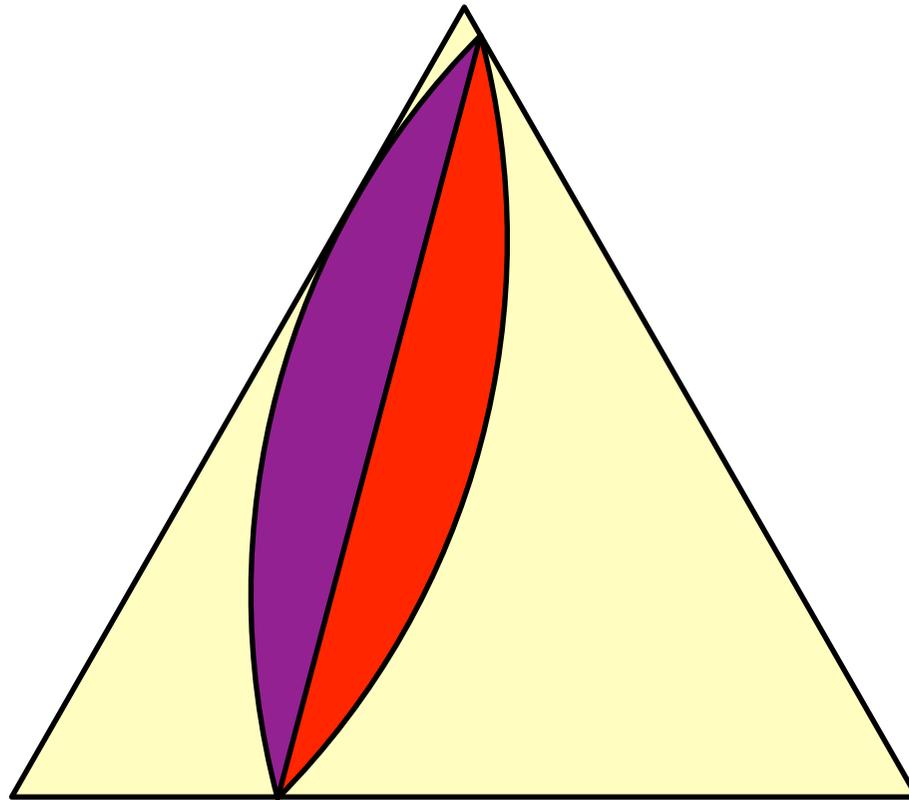
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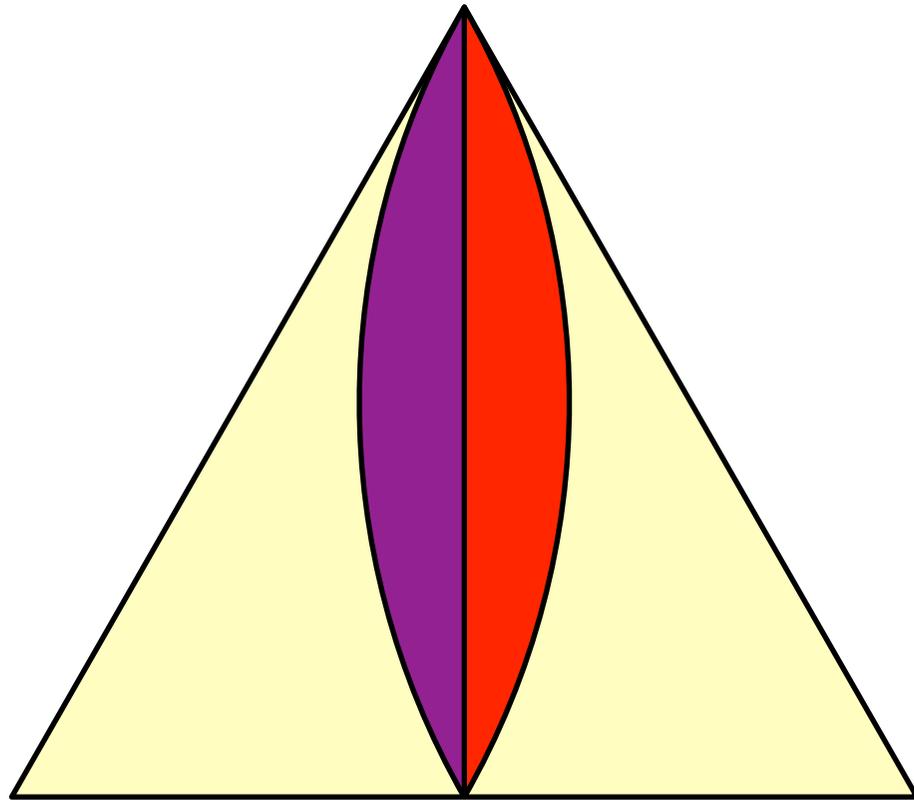
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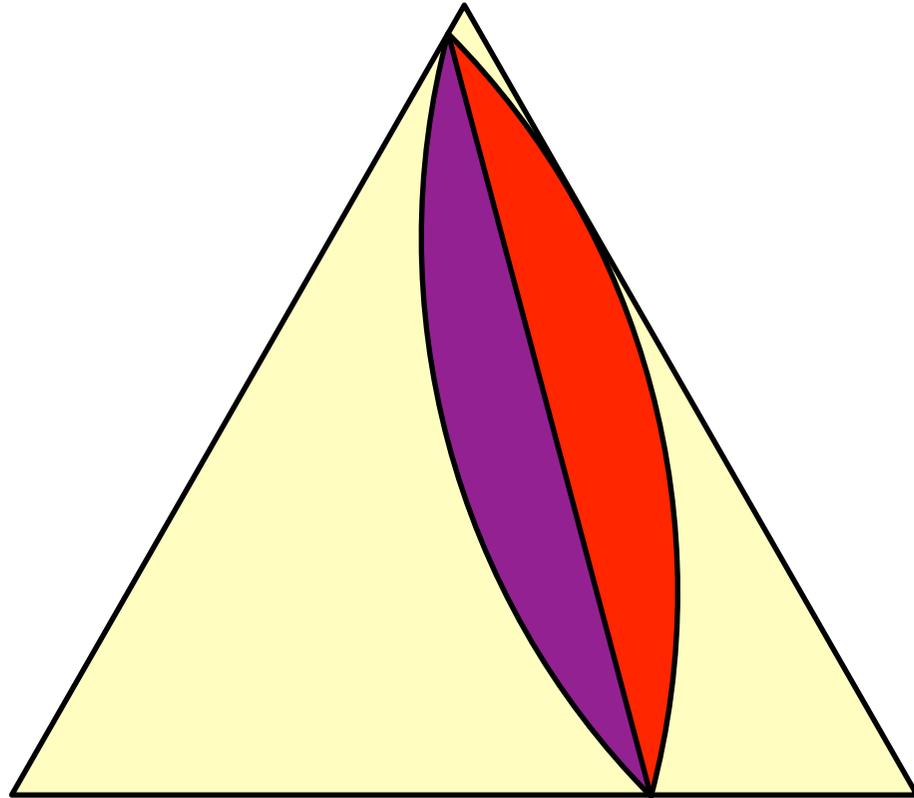
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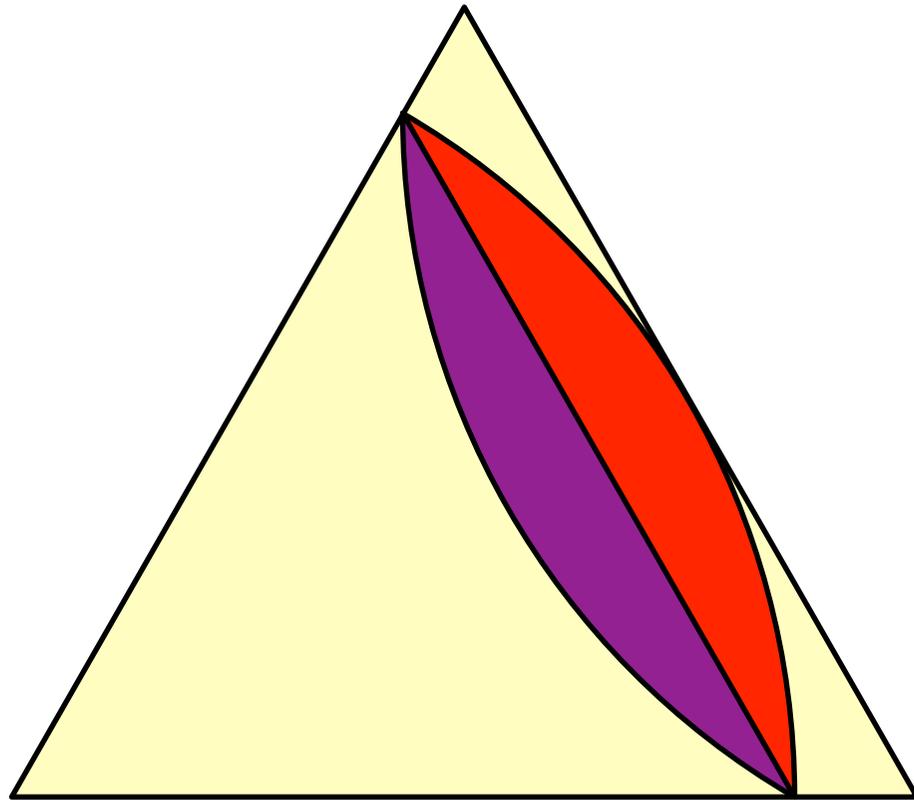
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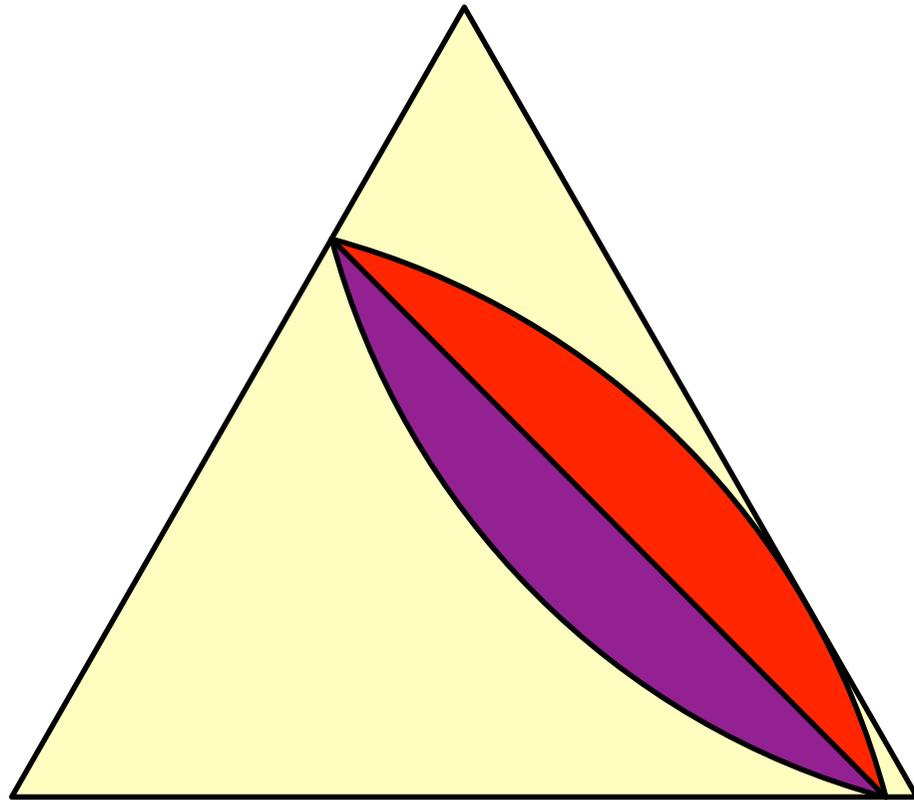
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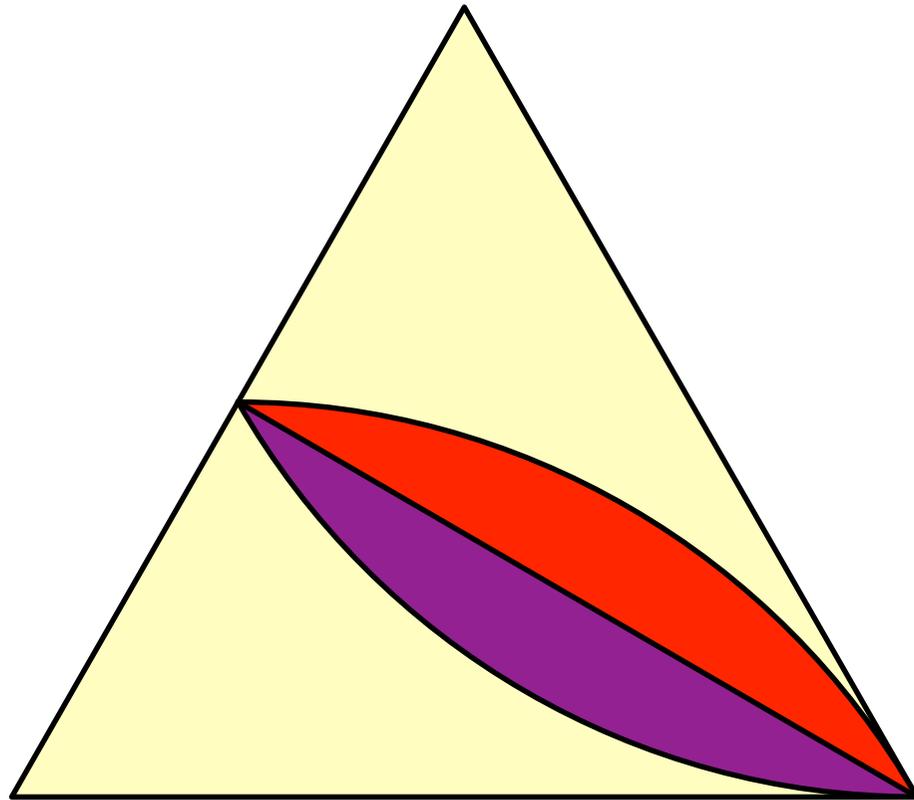
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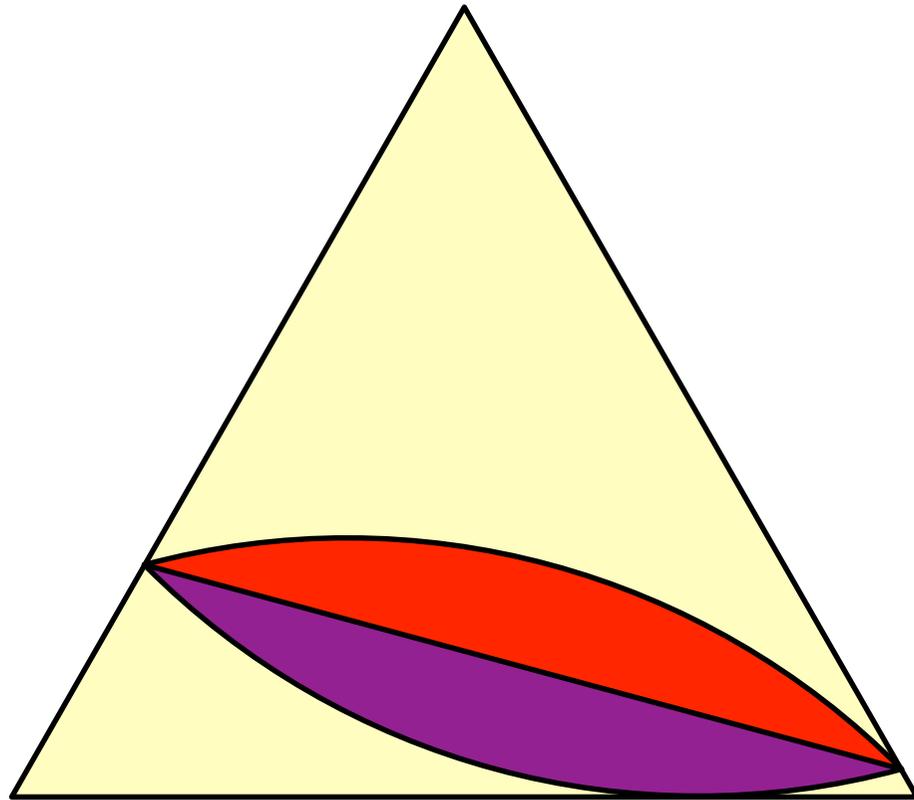
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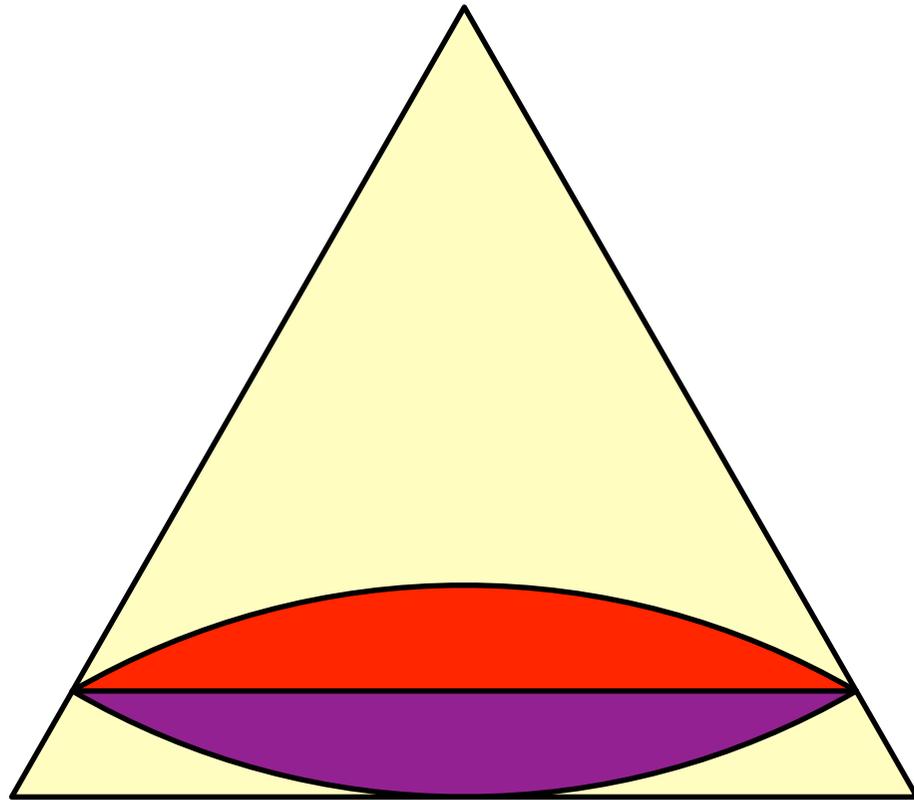
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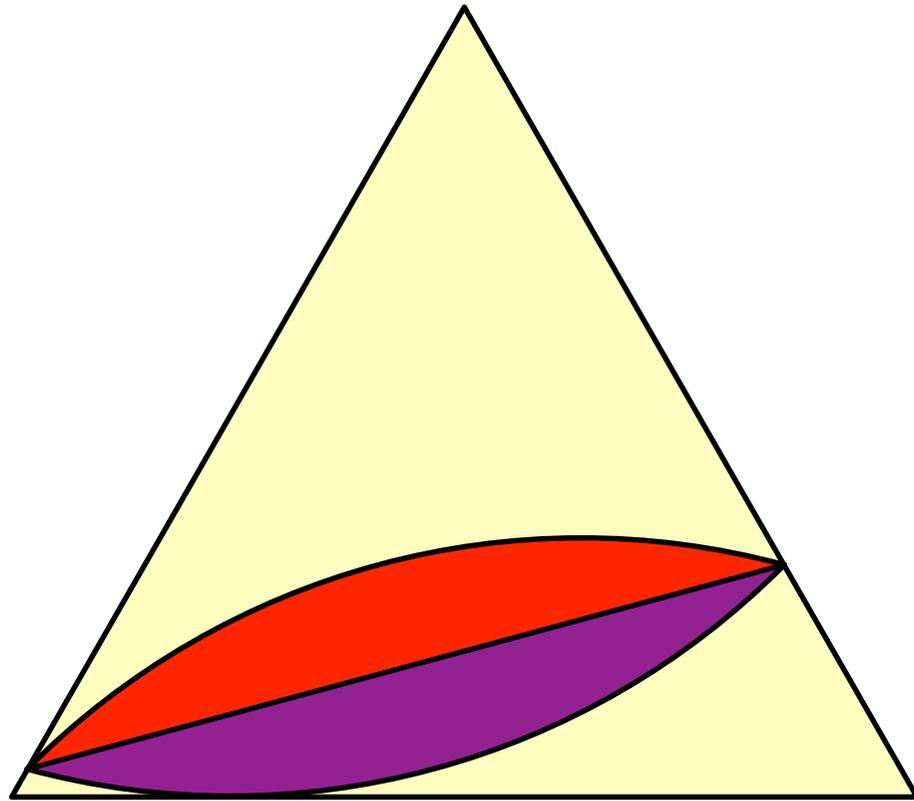
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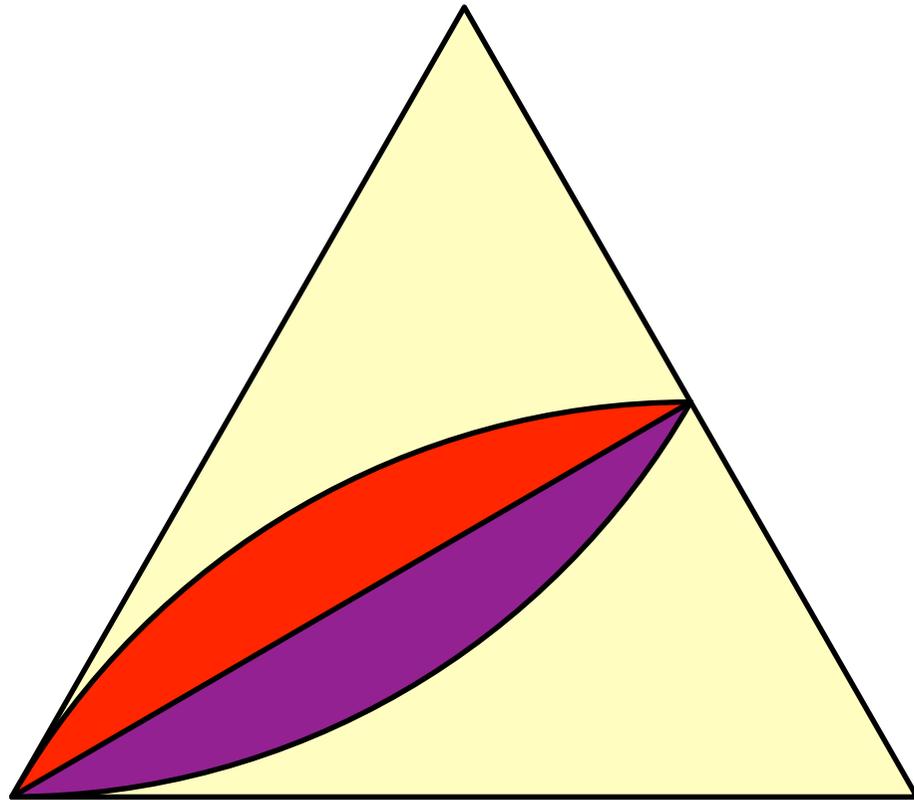
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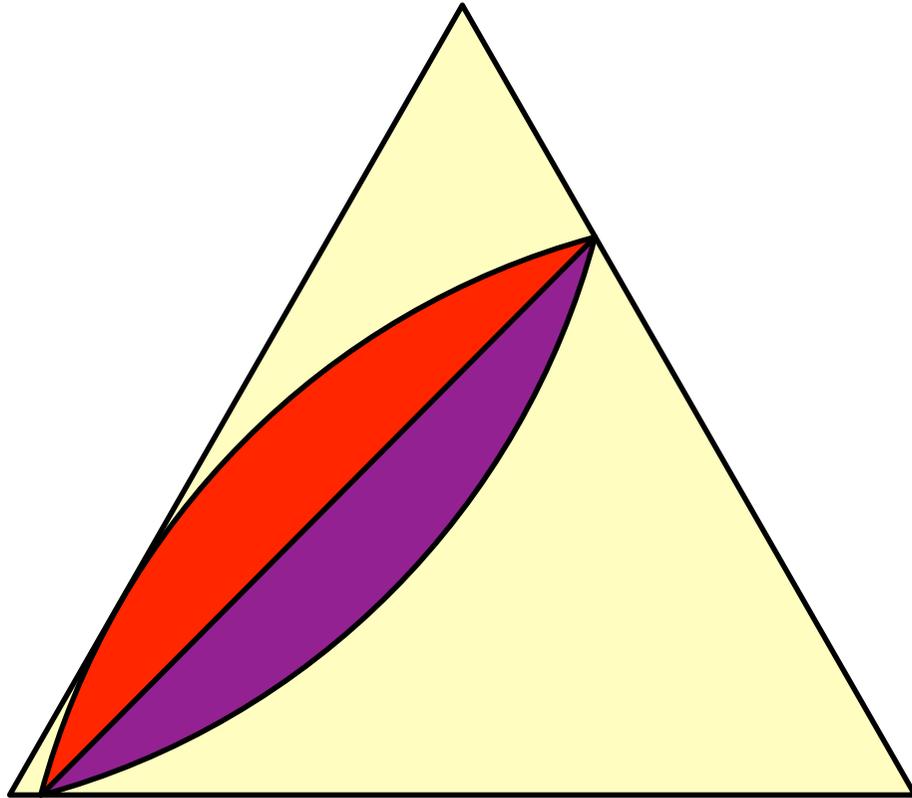
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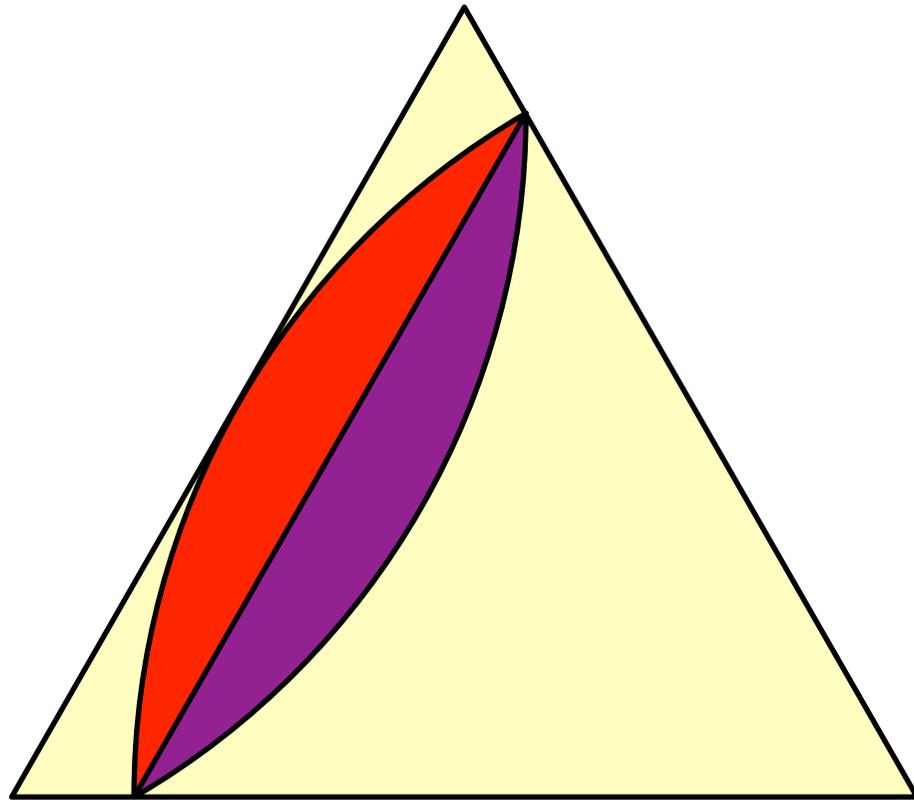
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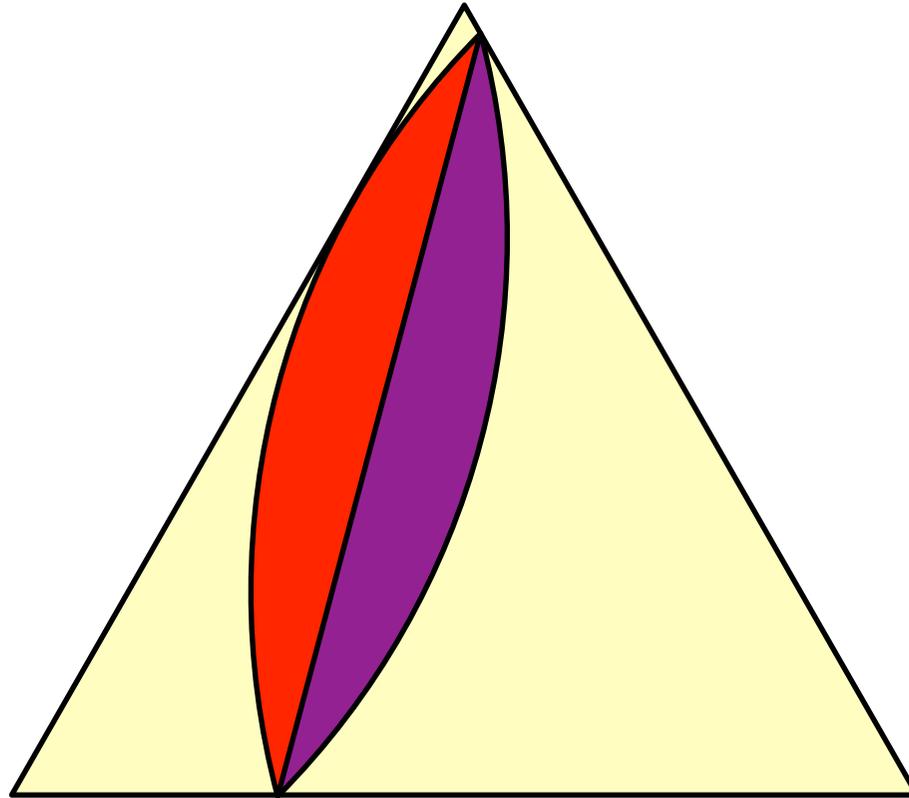
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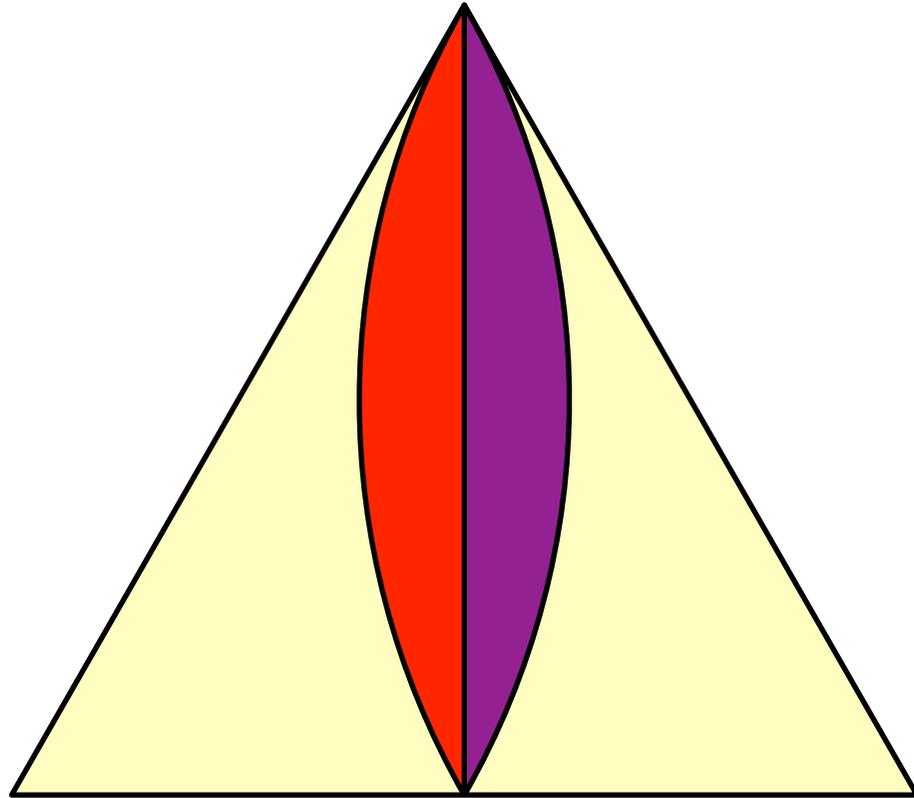
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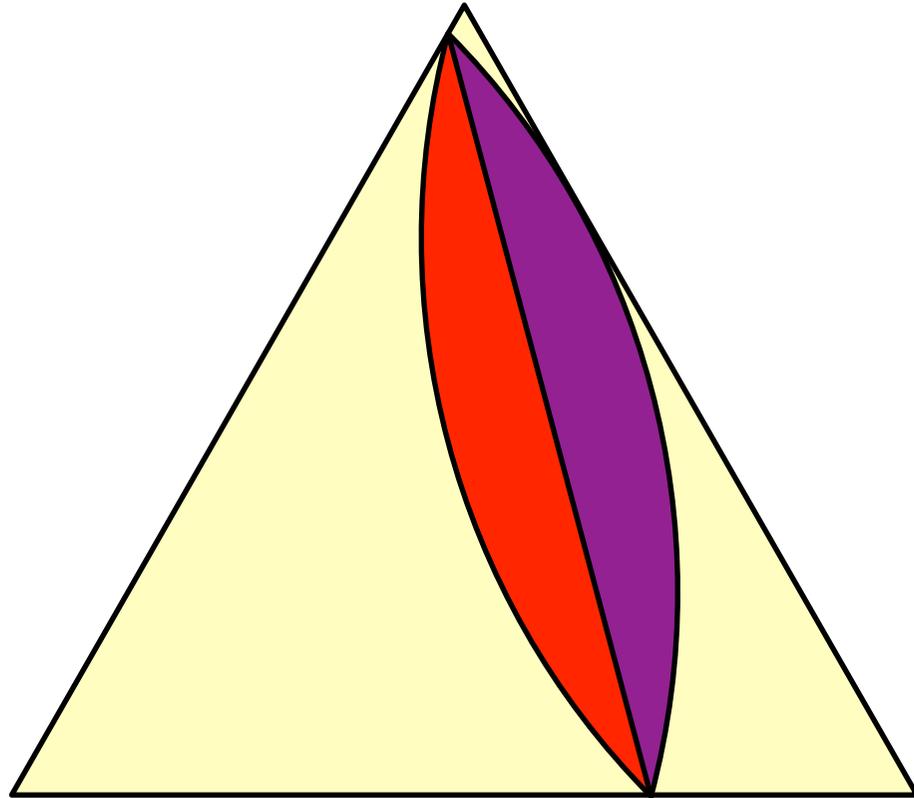
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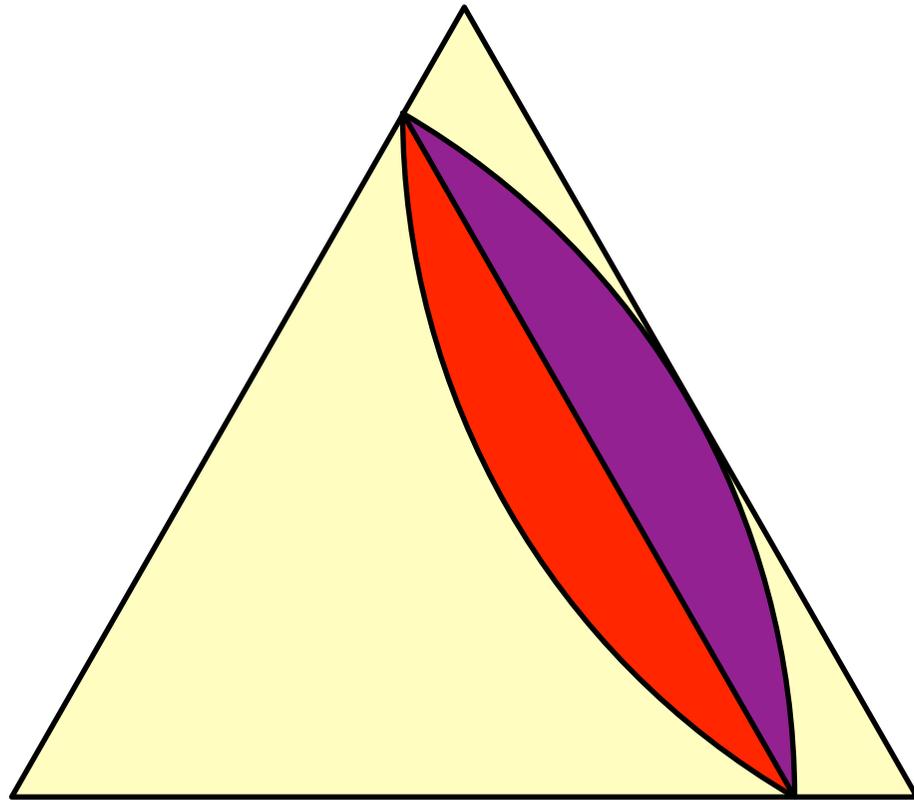
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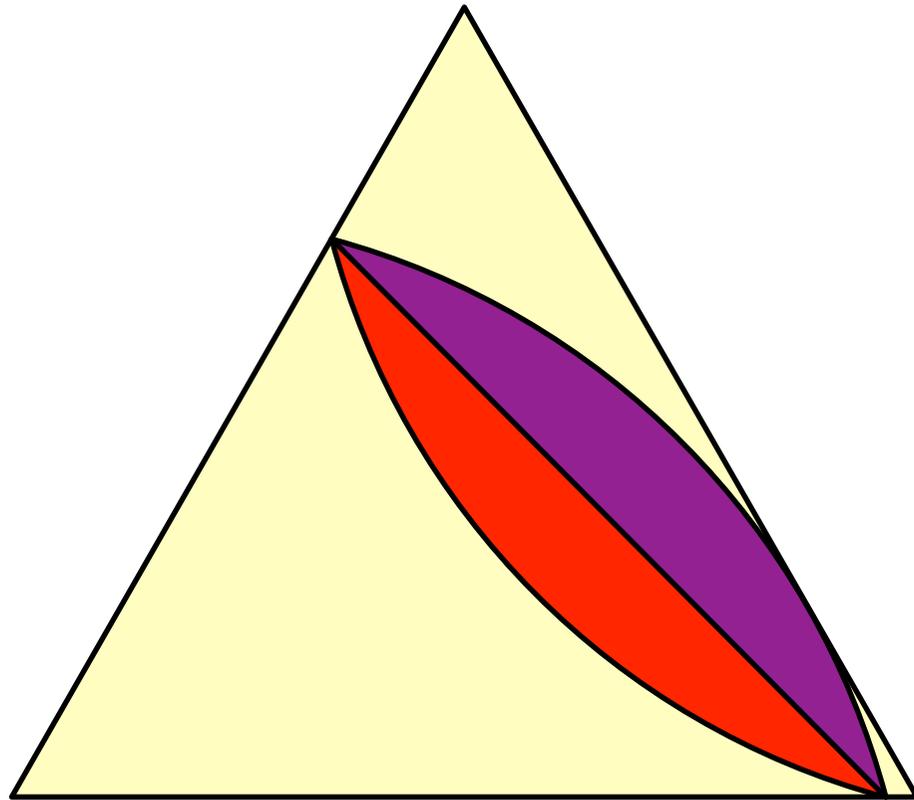
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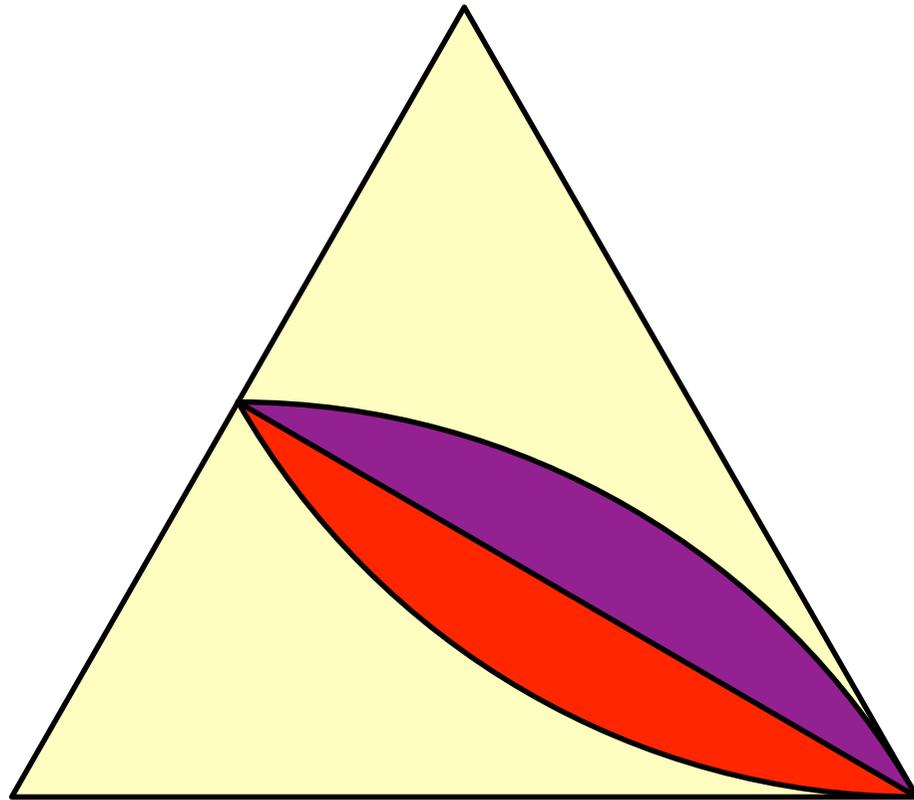
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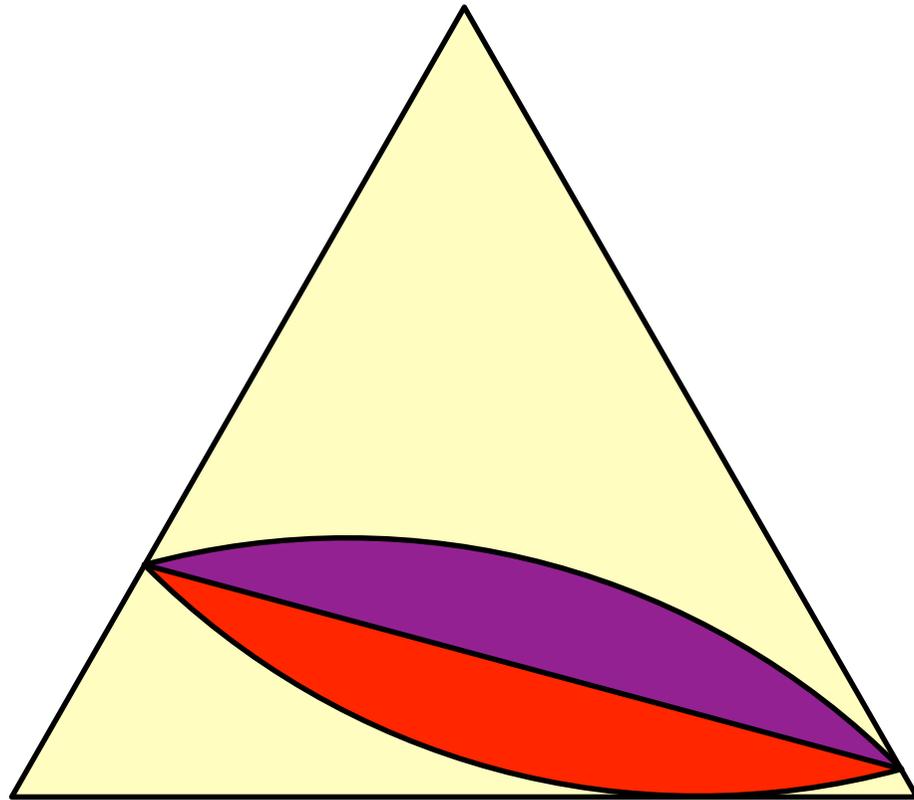
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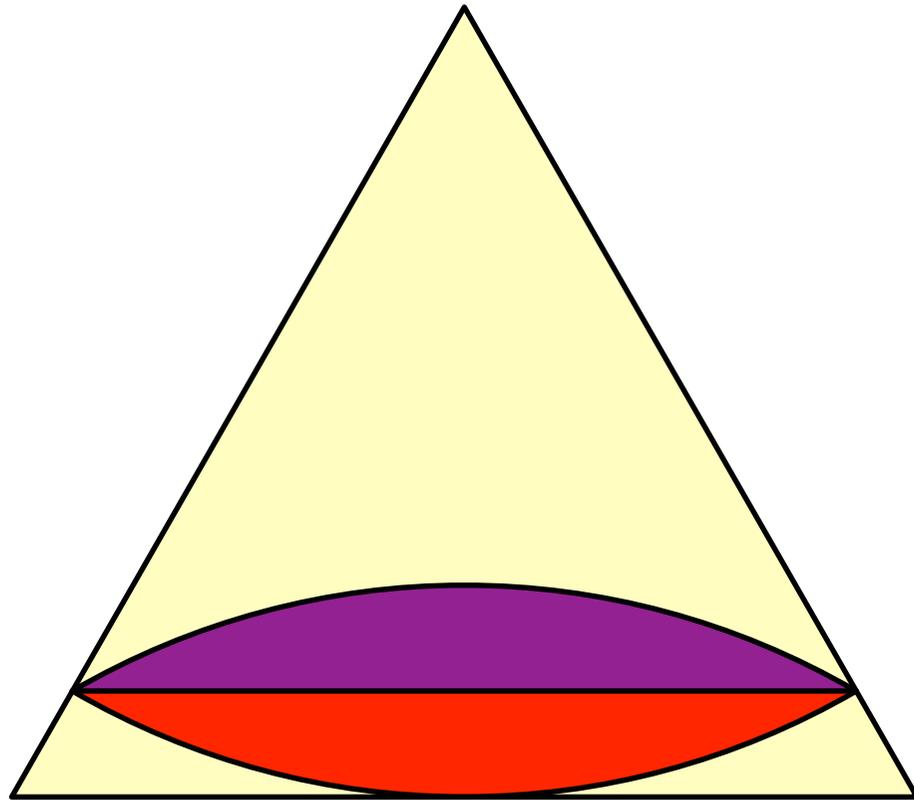
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Reuleaux-Zweieck



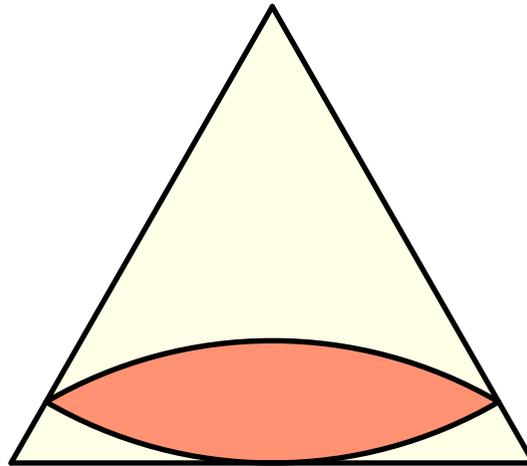
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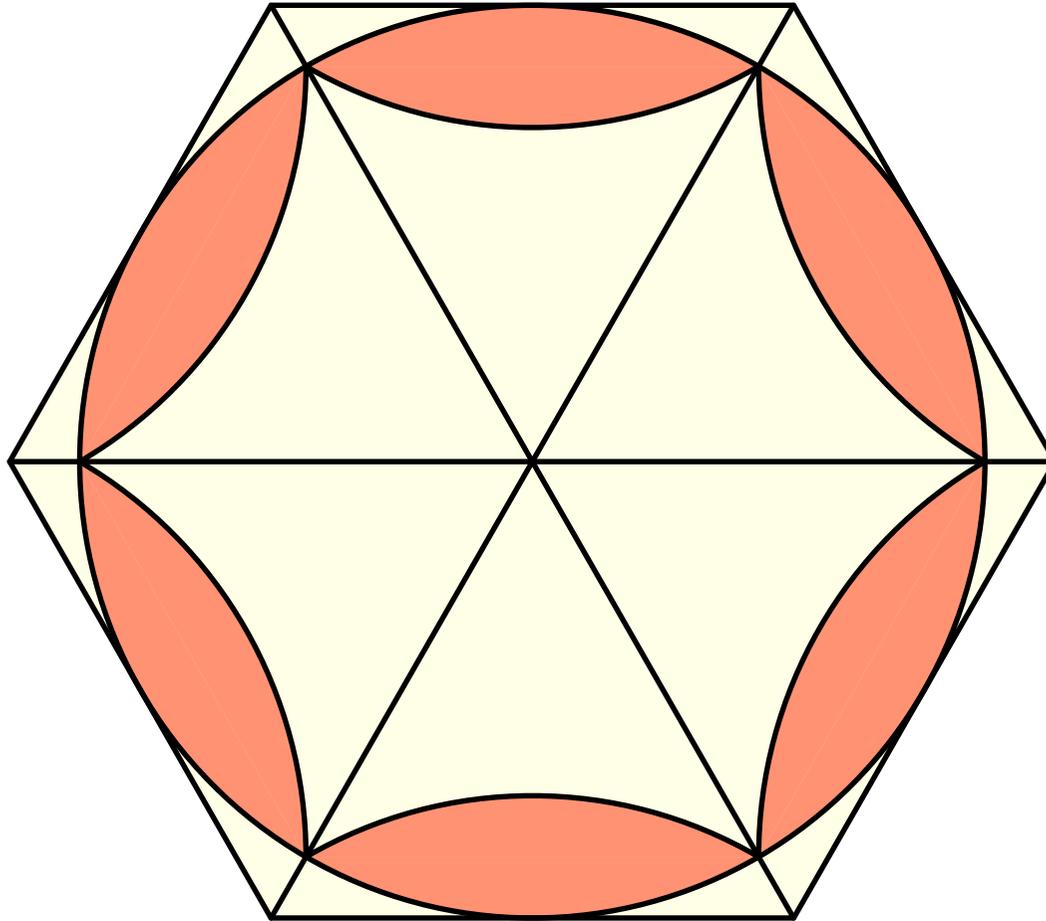
Beweis: Rechnerisch

- Geradengleichung
- Kreisgleichung
- quadratische Gleichung

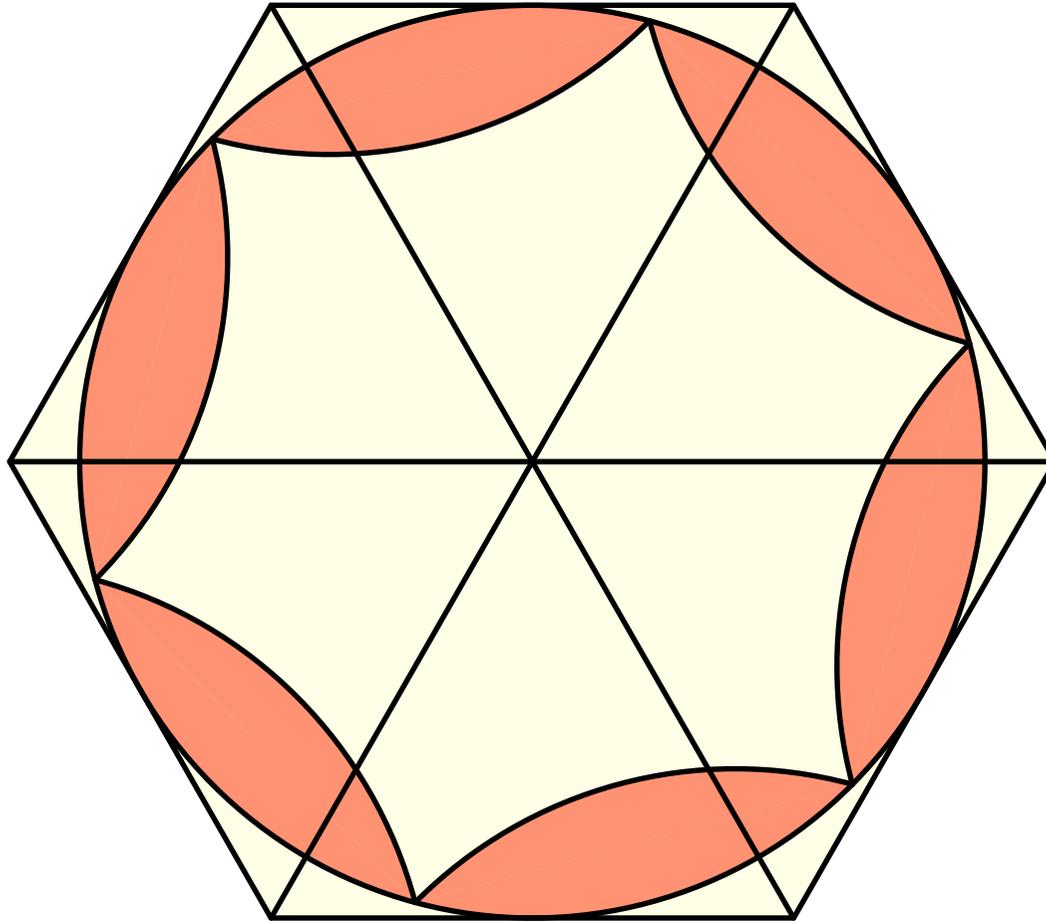
Beweis: Visuell und kinematisch



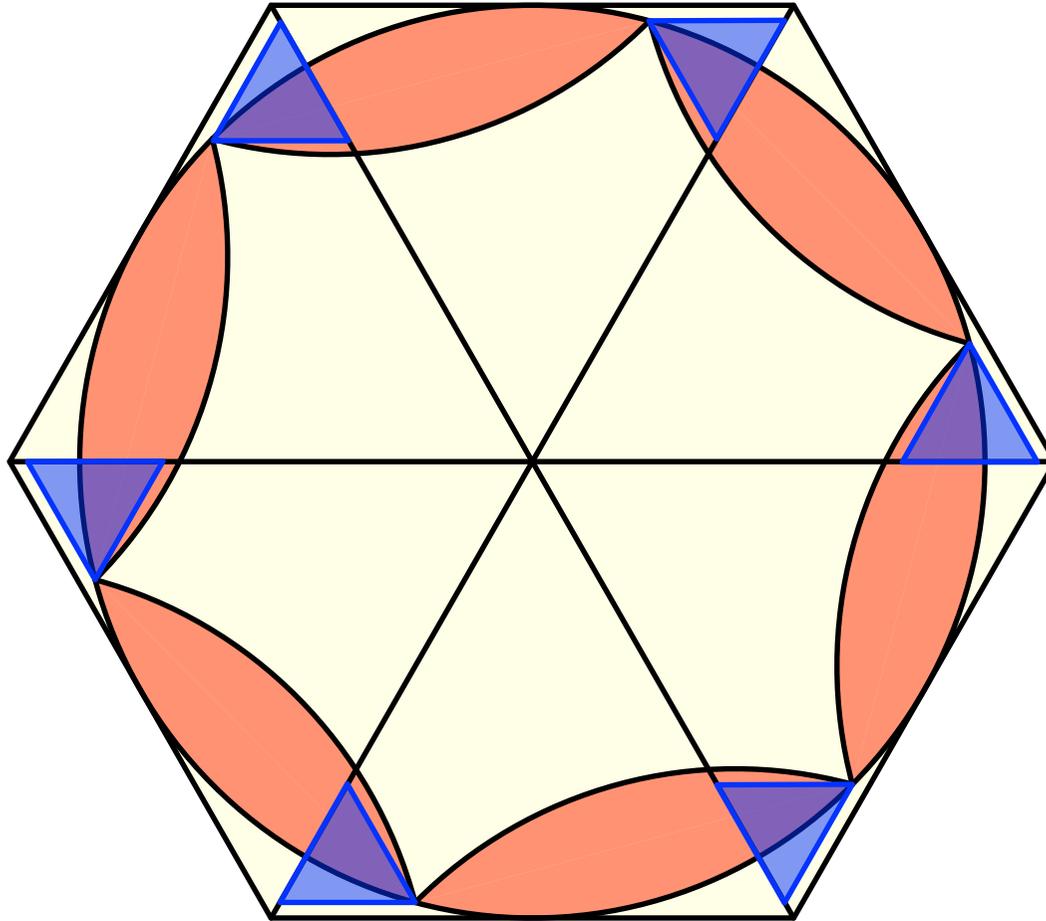
Beweis



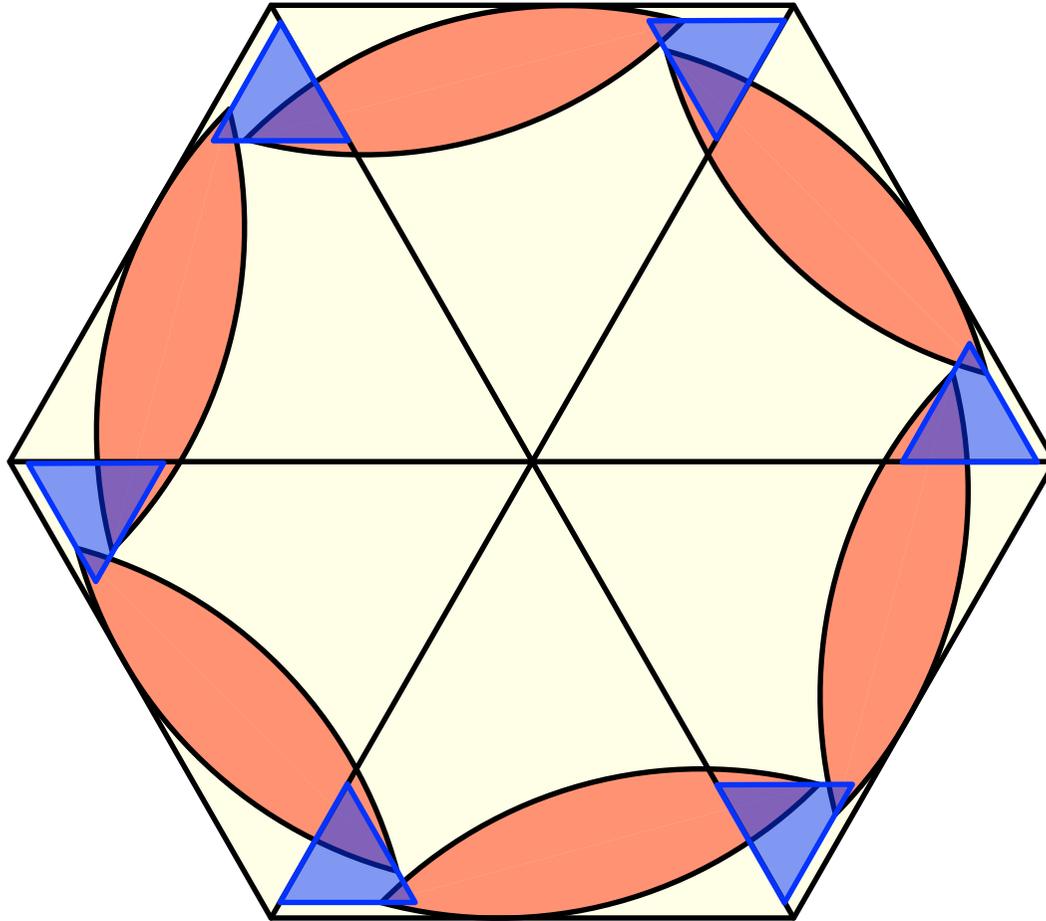
Beweis



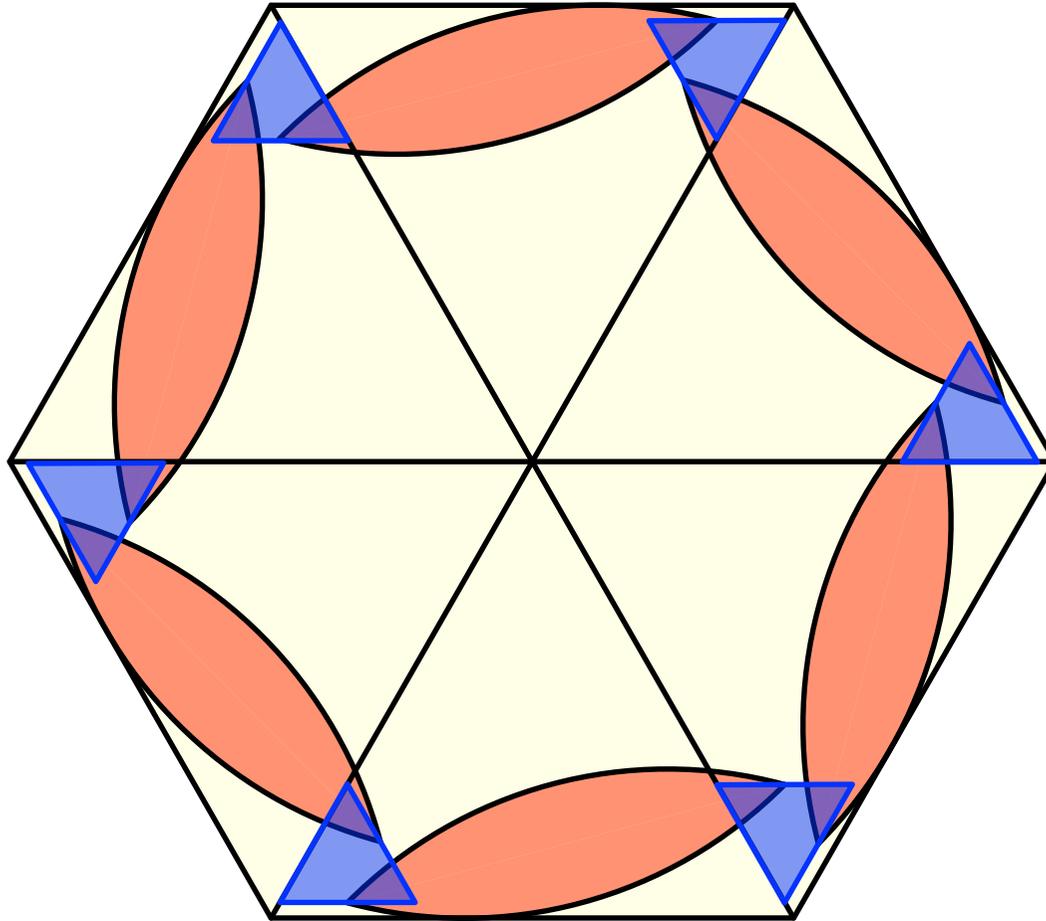
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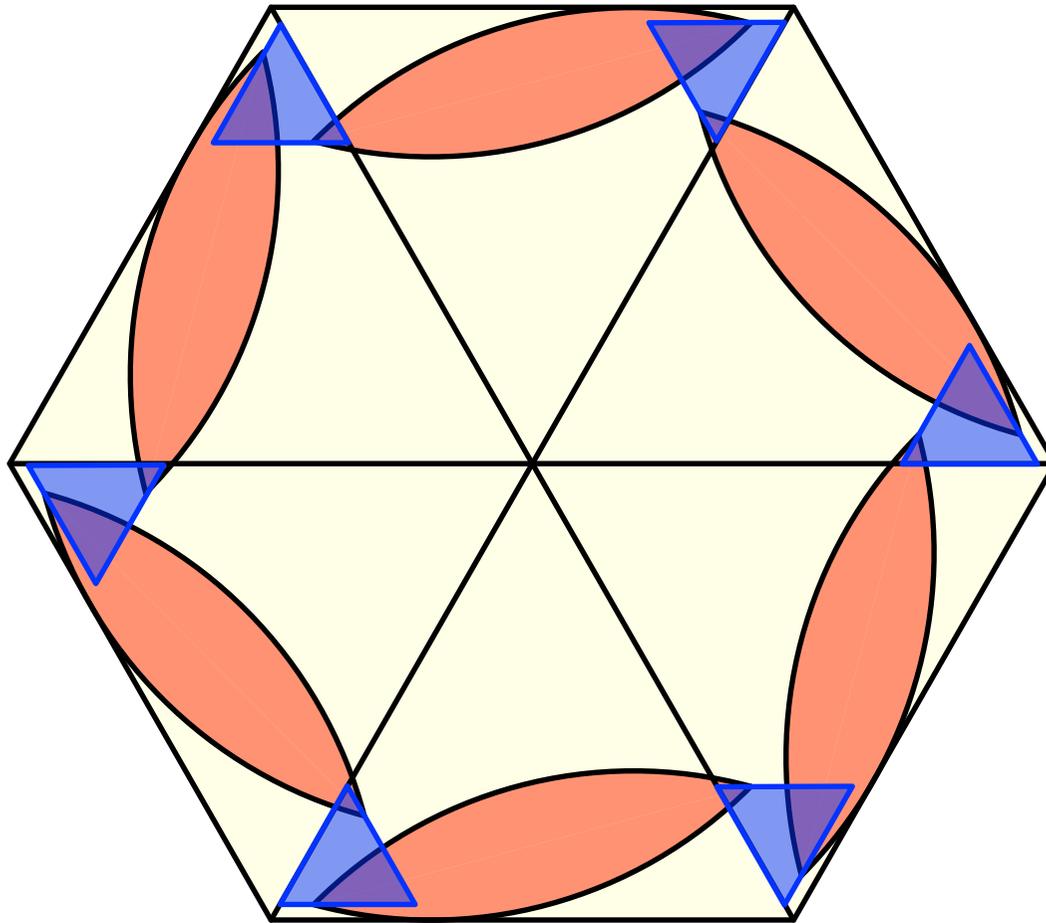
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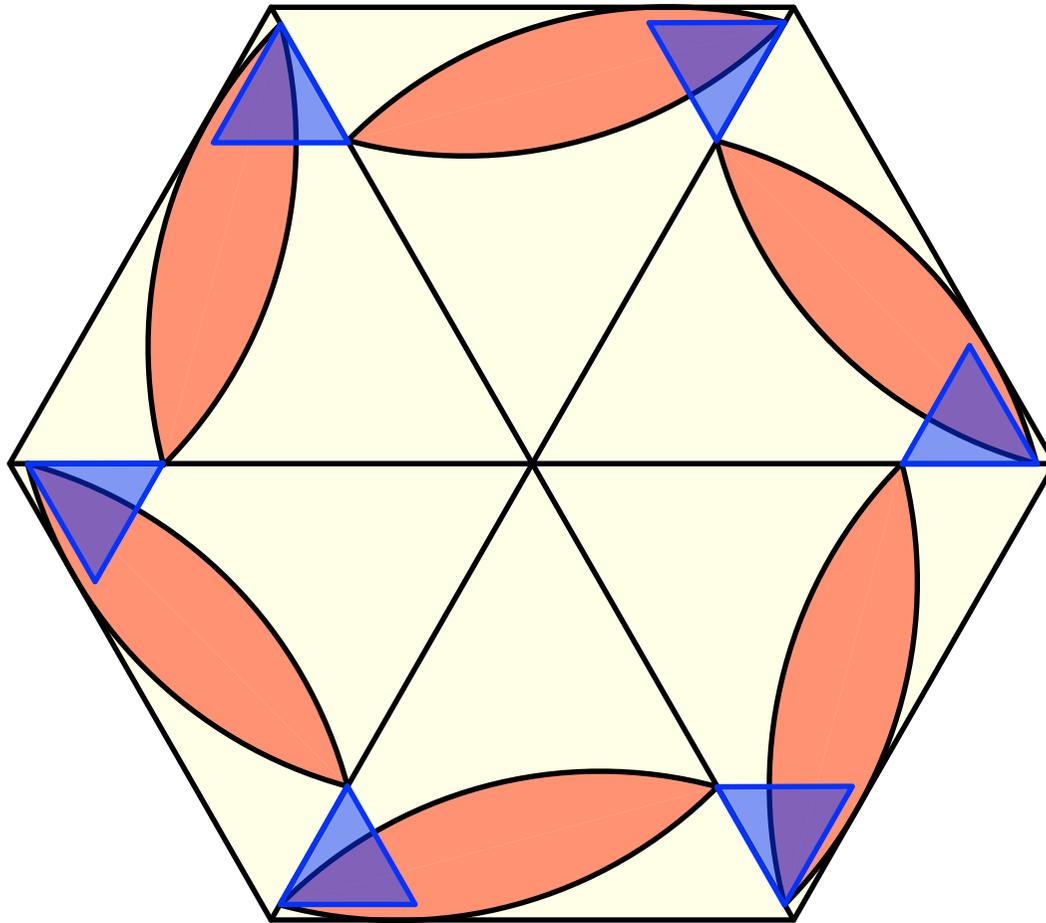
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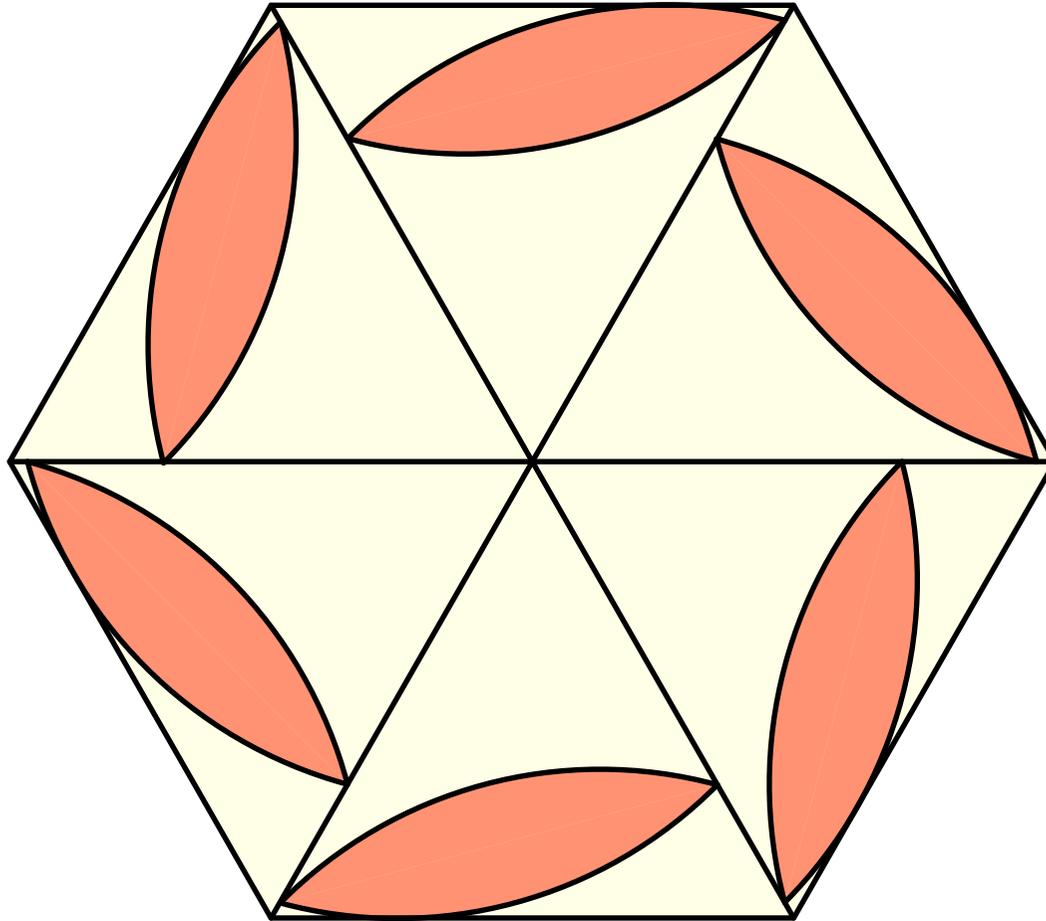
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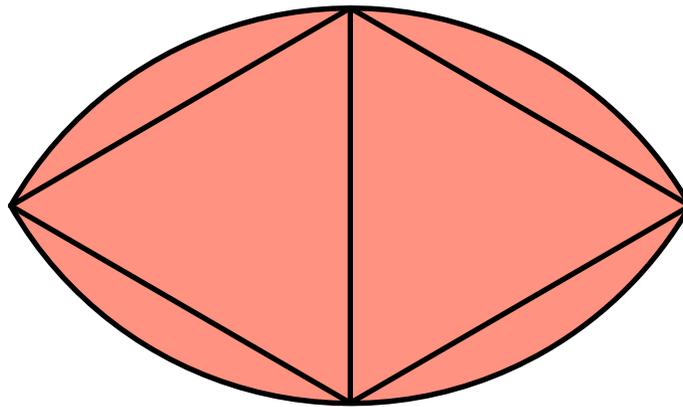
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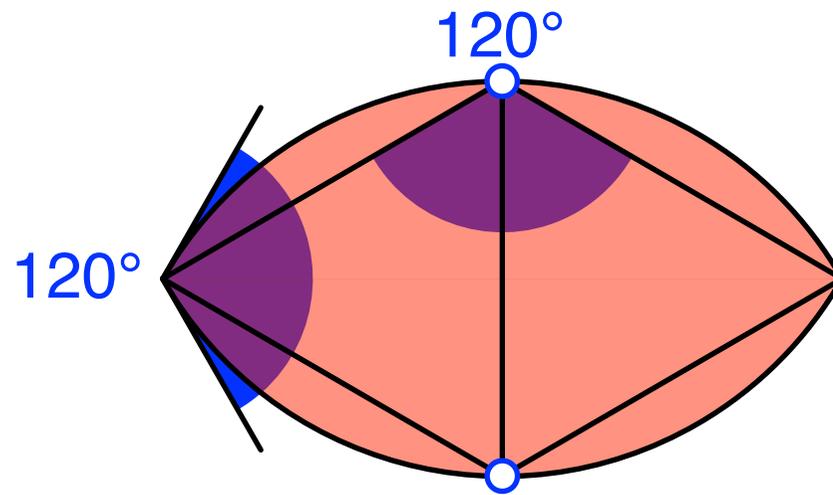
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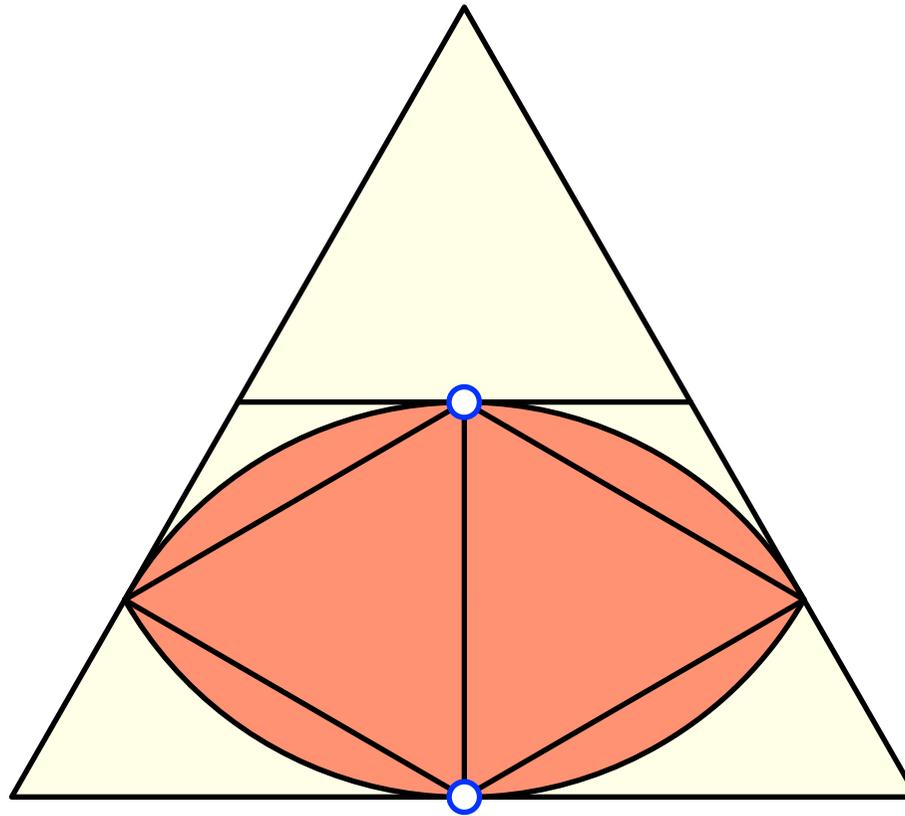
120°-Zweieck



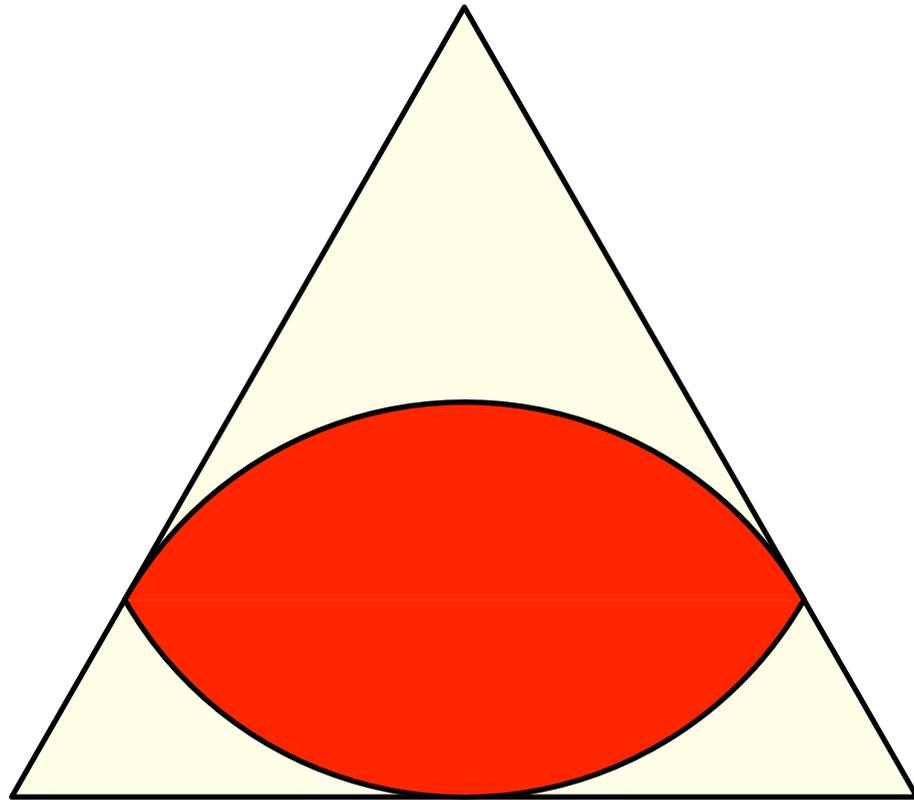
120°-Zweieck



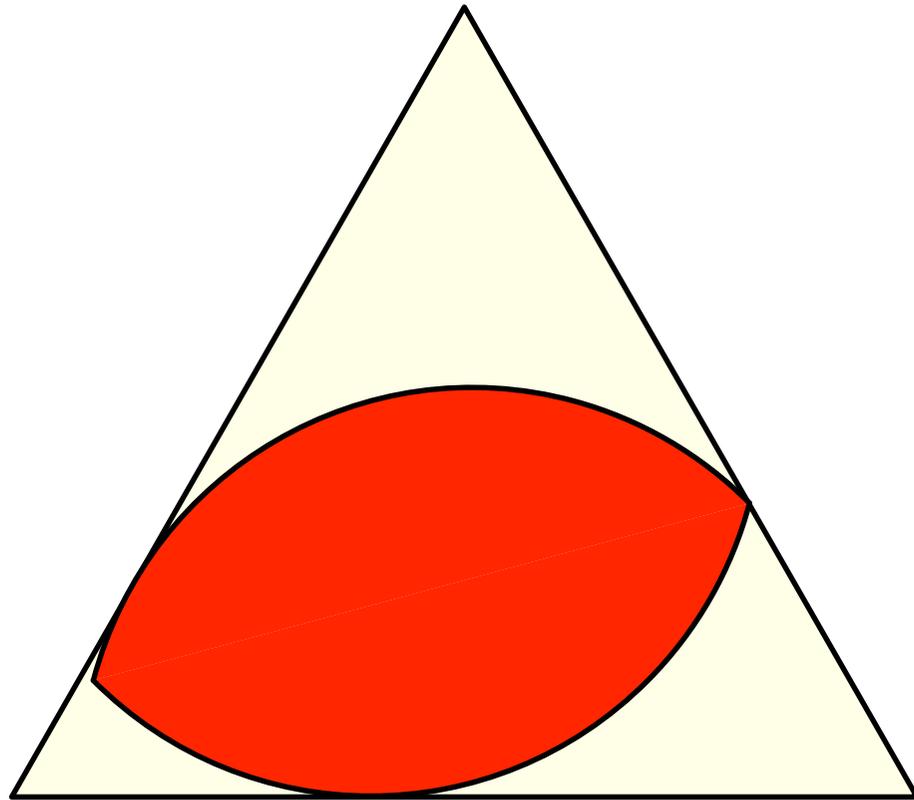
120°-Zweieck



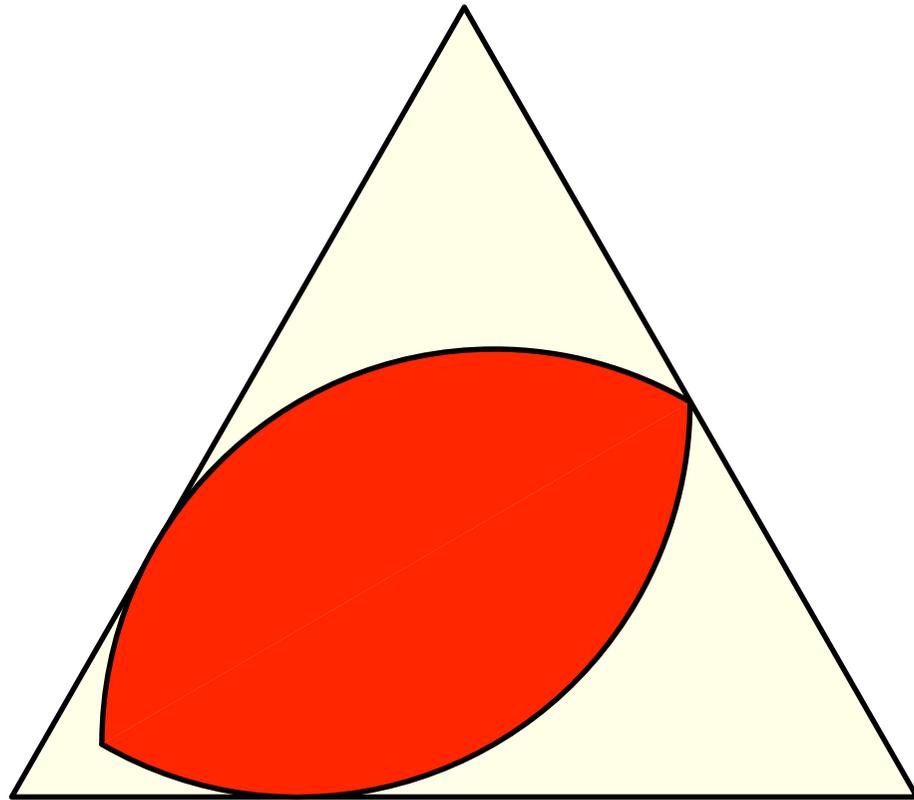
120°-Zweieck



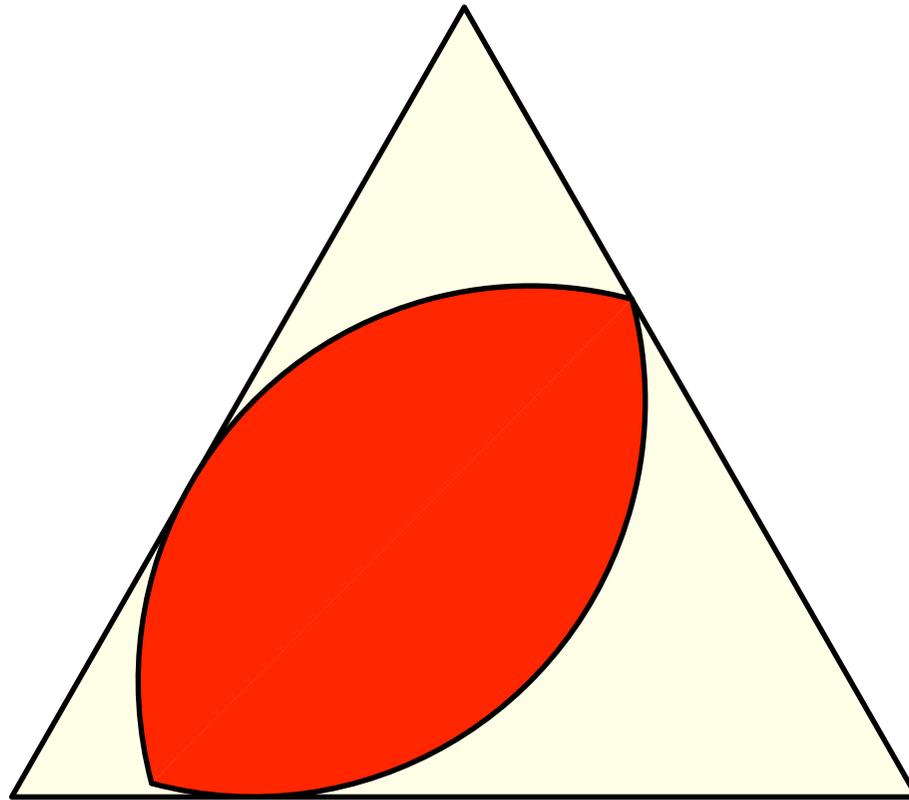
120°-Zweieck



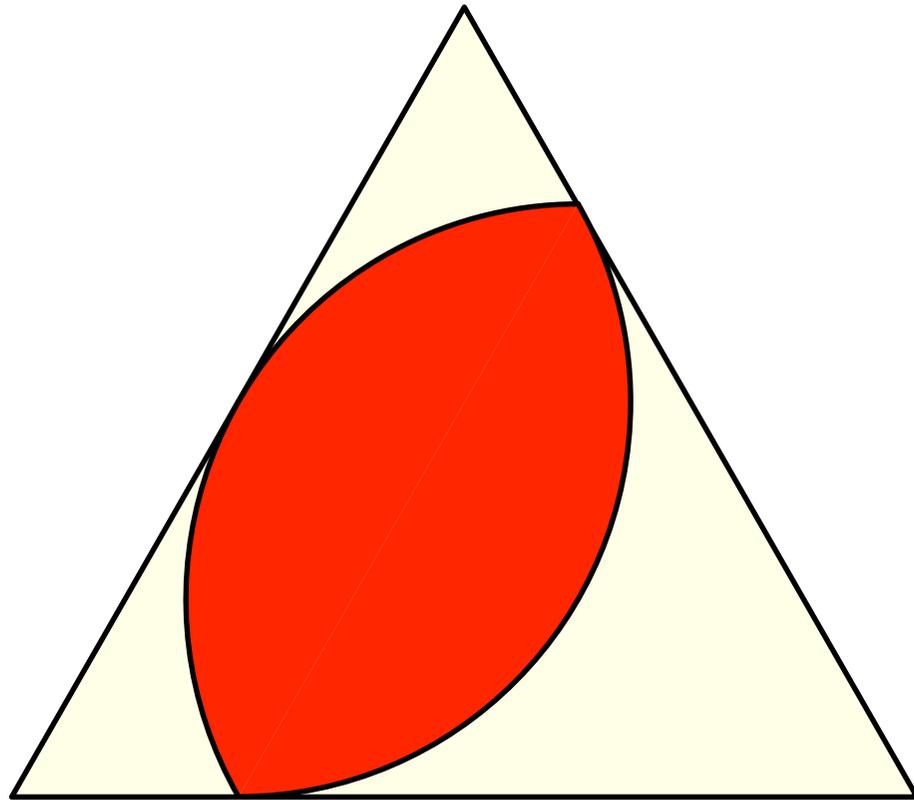
120°-Zweieck



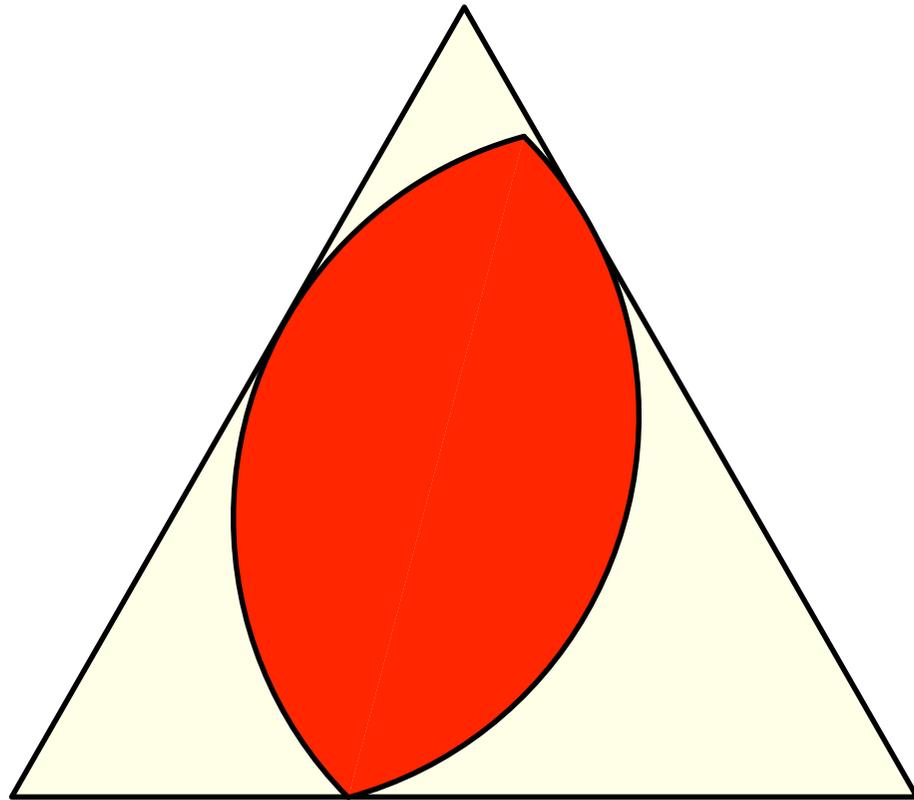
120°-Zweieck



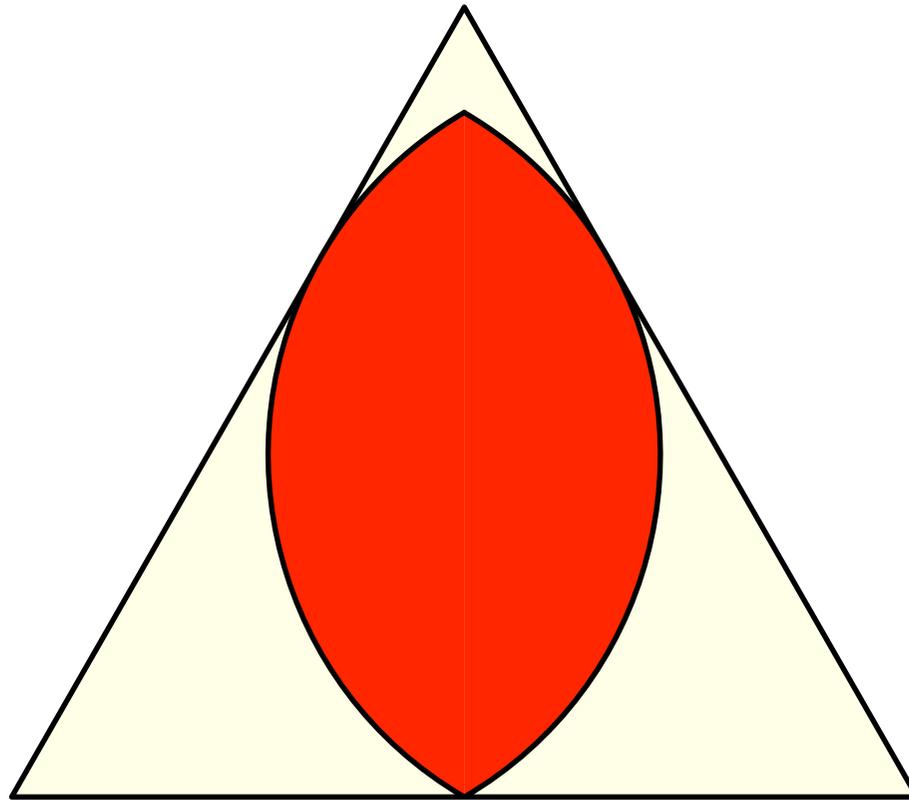
120°-Zweieck



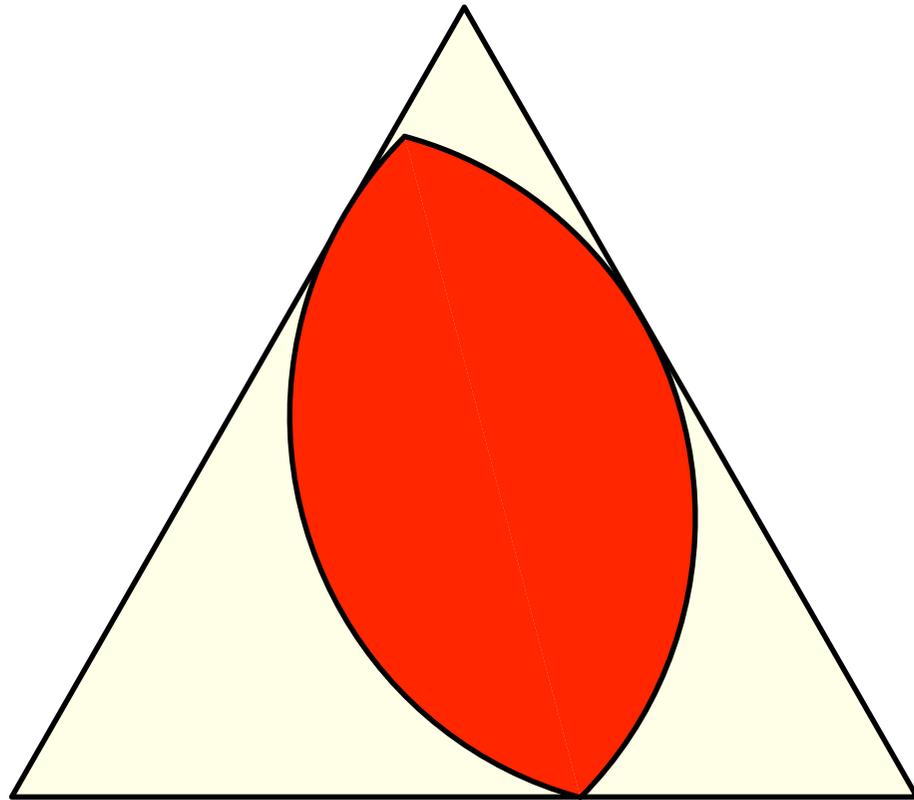
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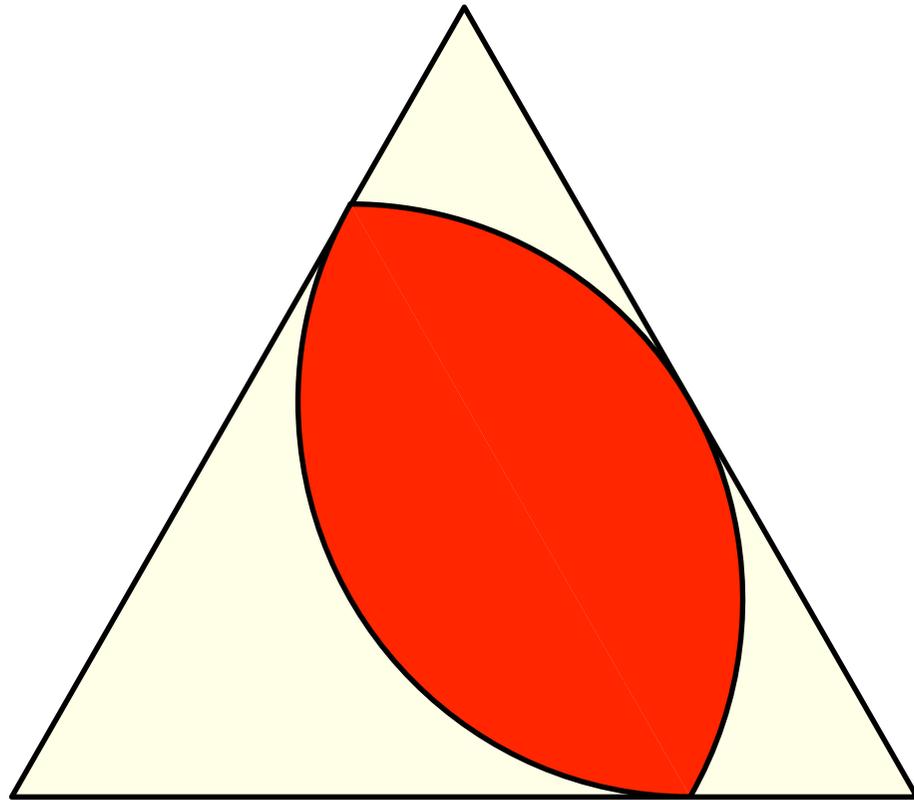
120°-Zweieck



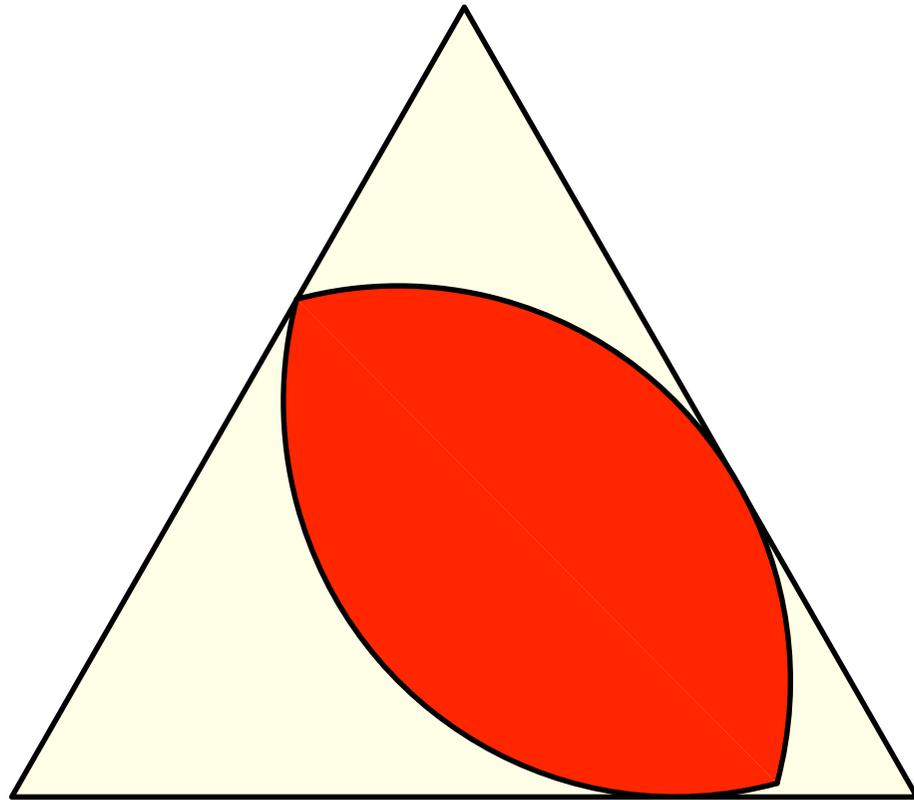
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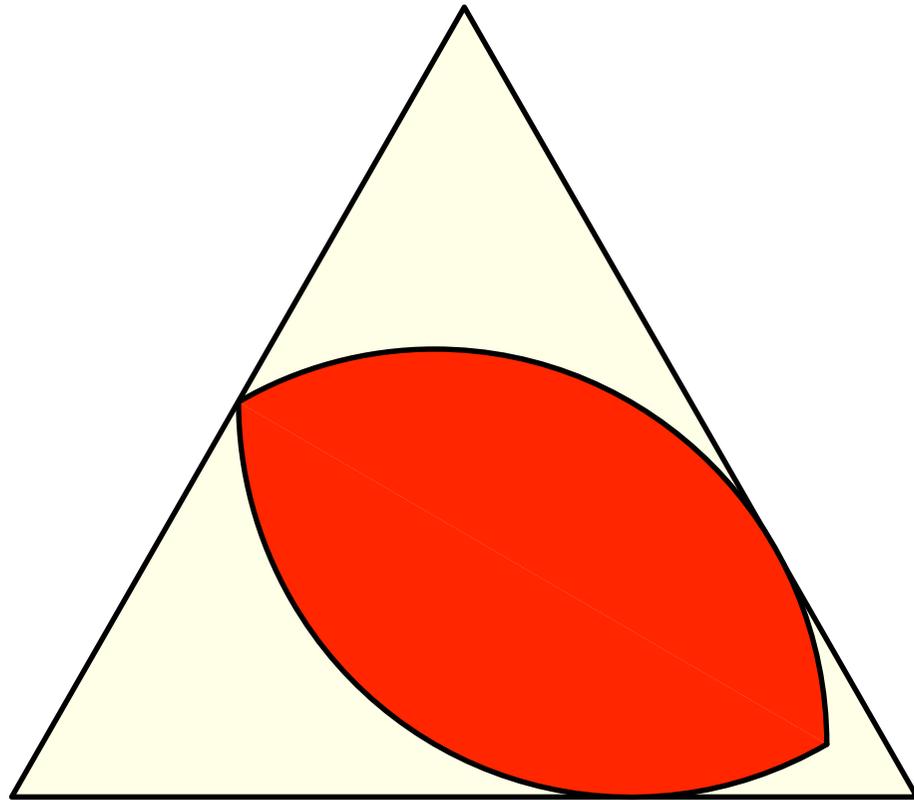
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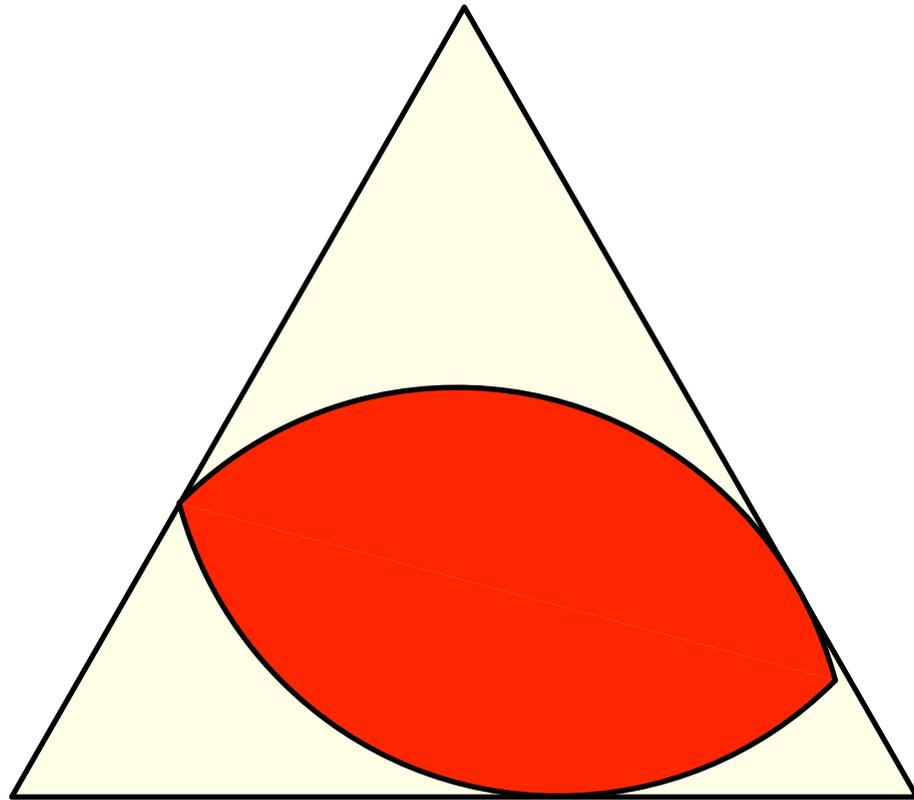
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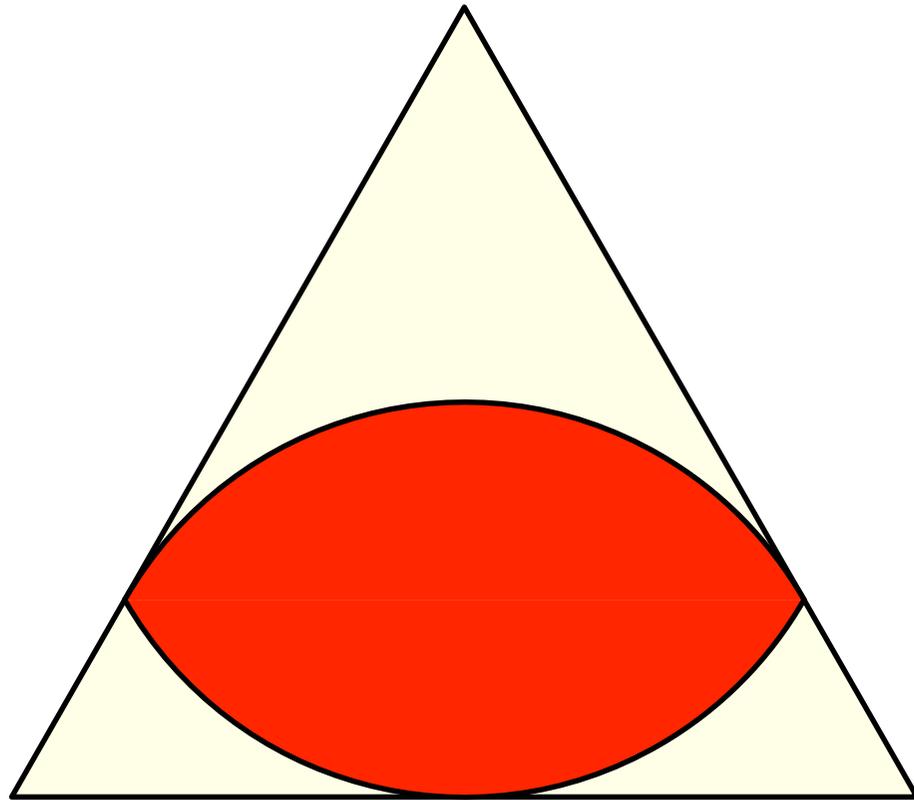
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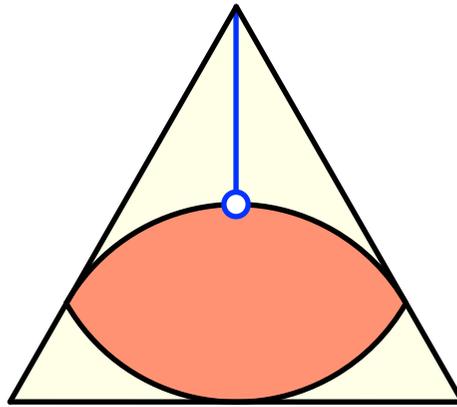
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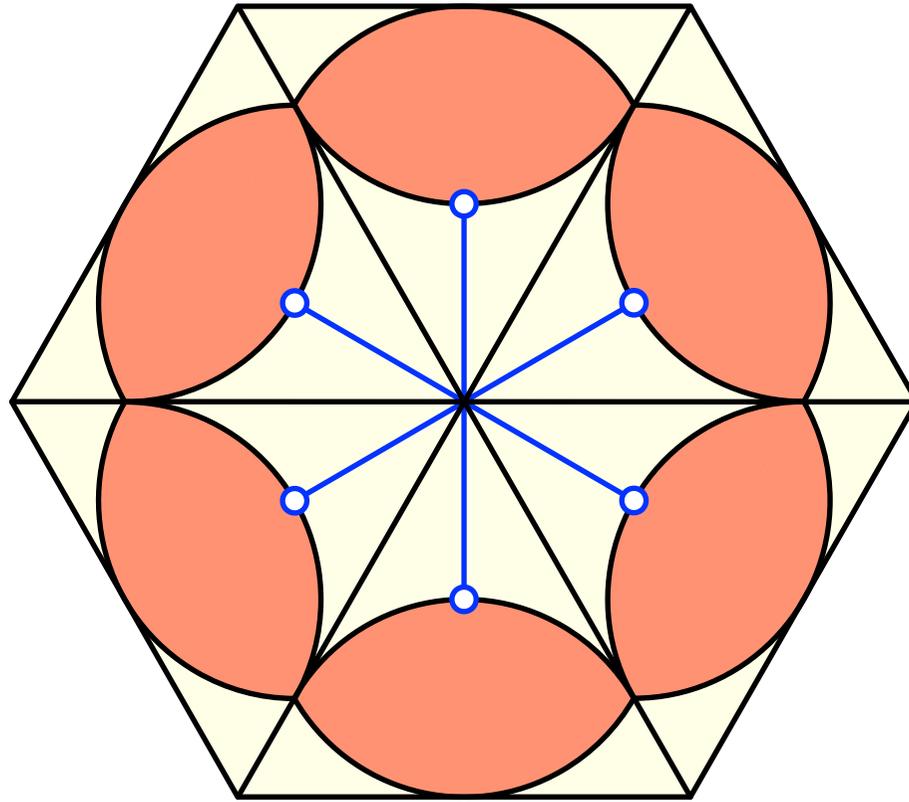
120°-Zweieck



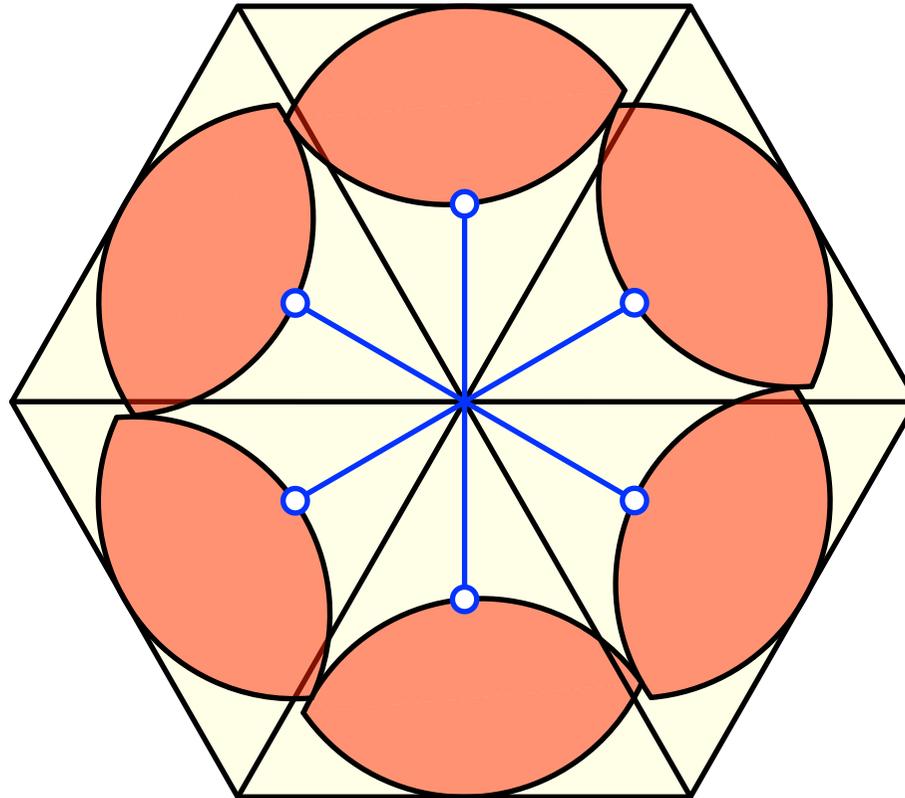
Beweis



Beweis

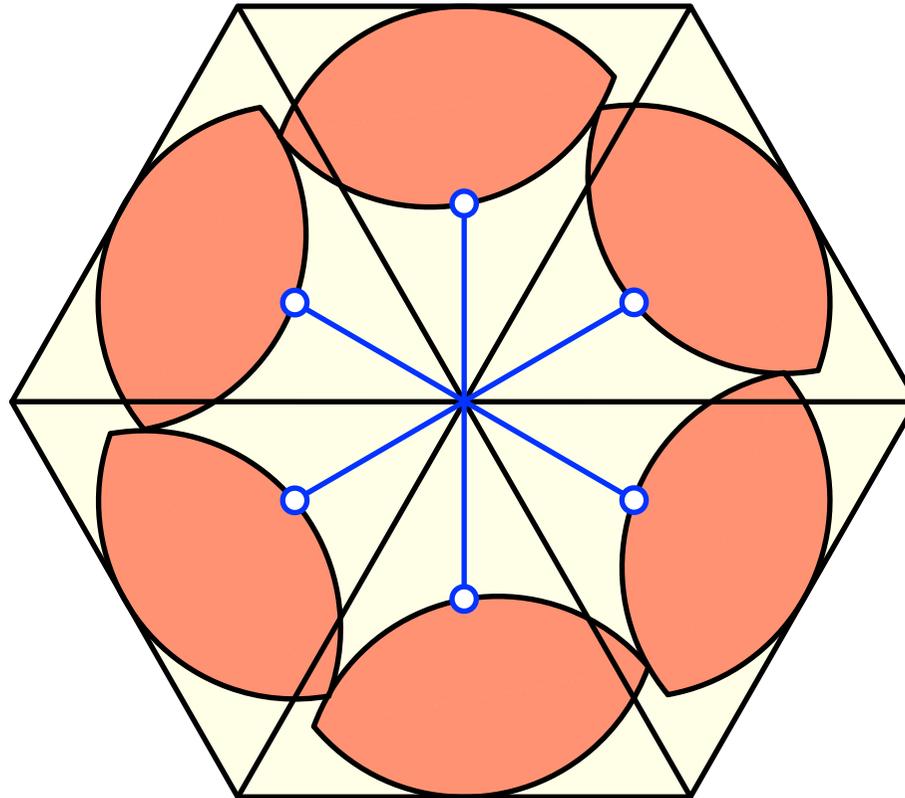


Beweis



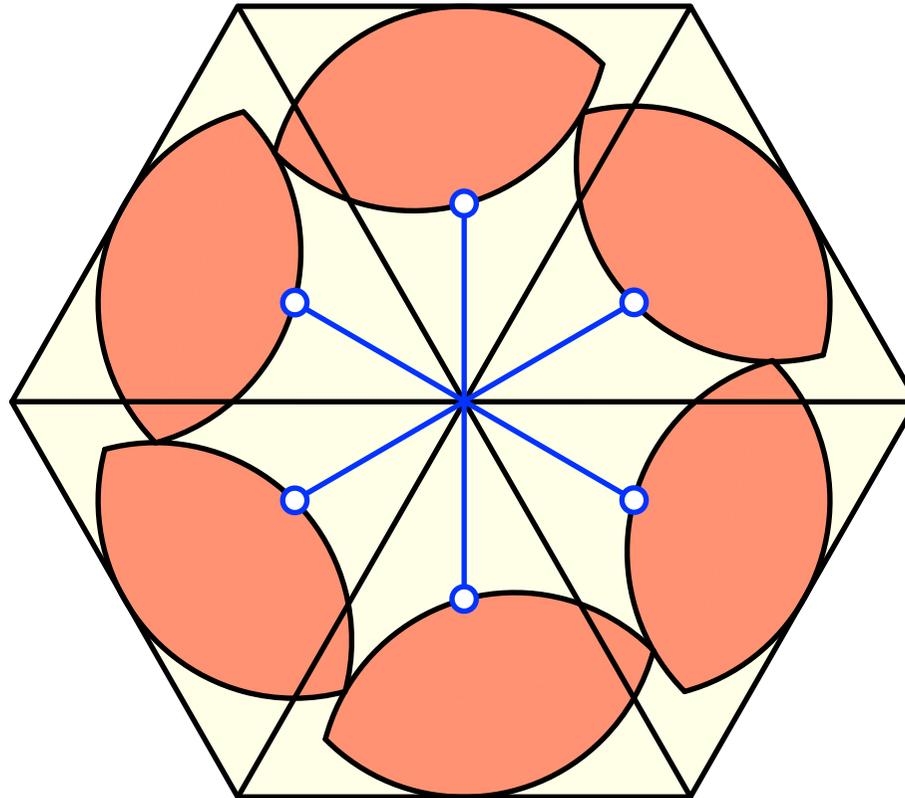
Modell

Beweis



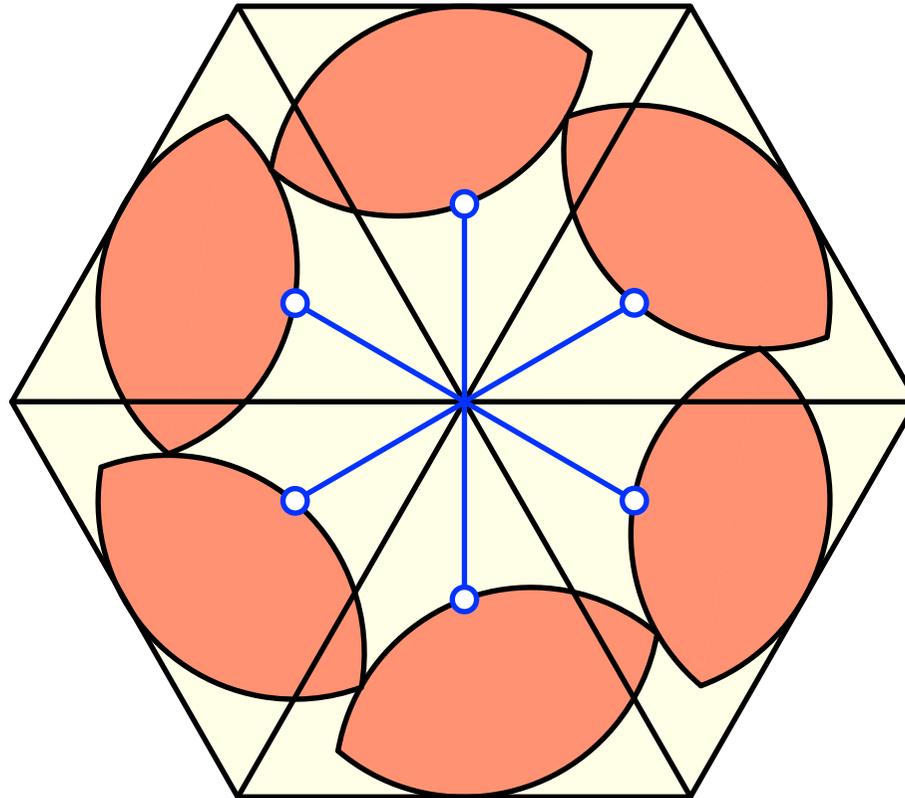
Modell

Beweis



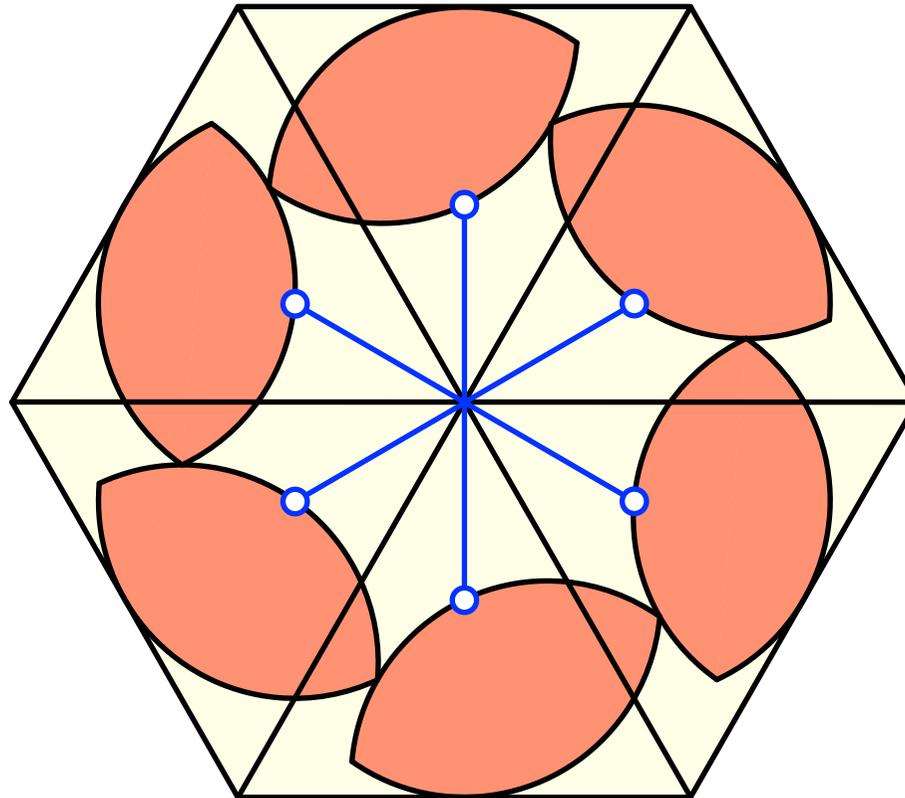
Modell

Beweis



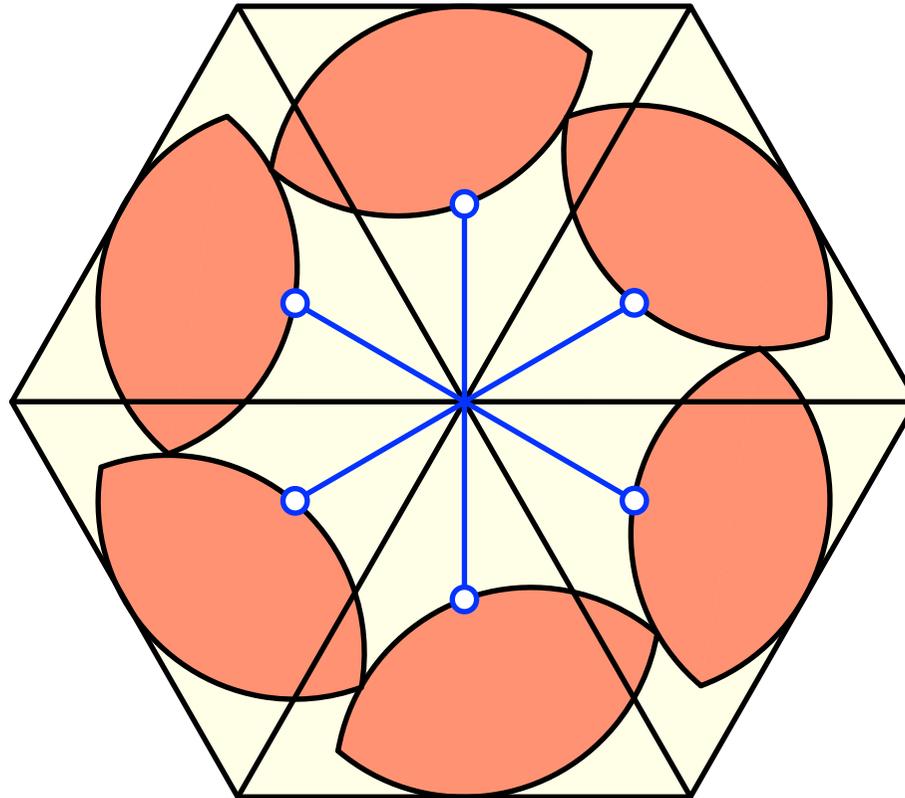
Modell

Beweis



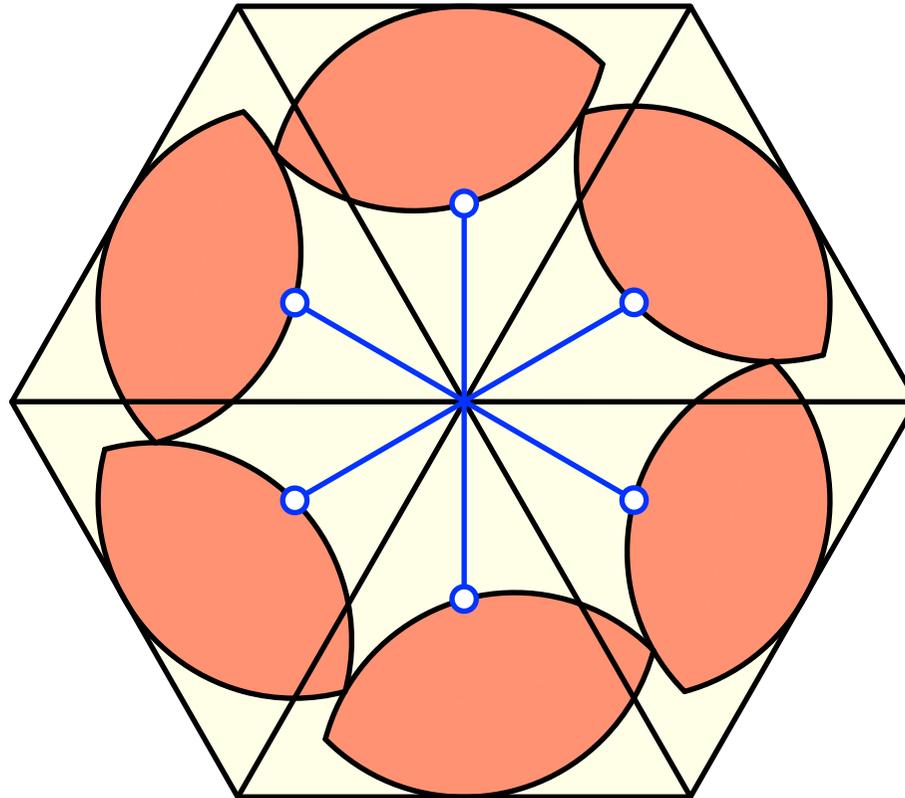
Modell

Beweis



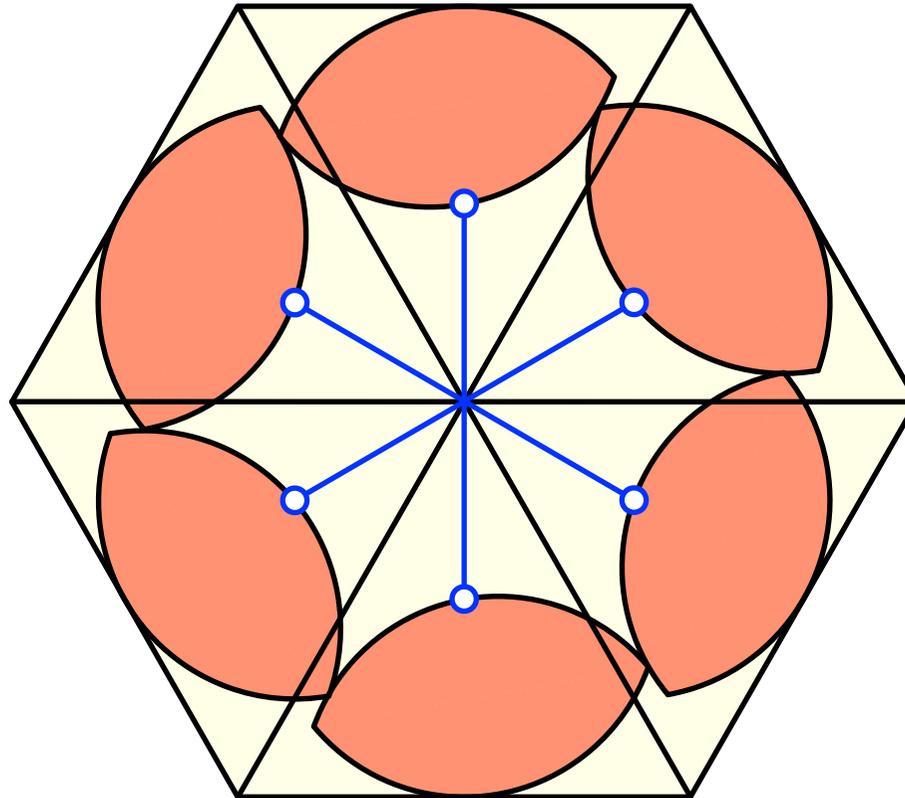
Modell

Beweis



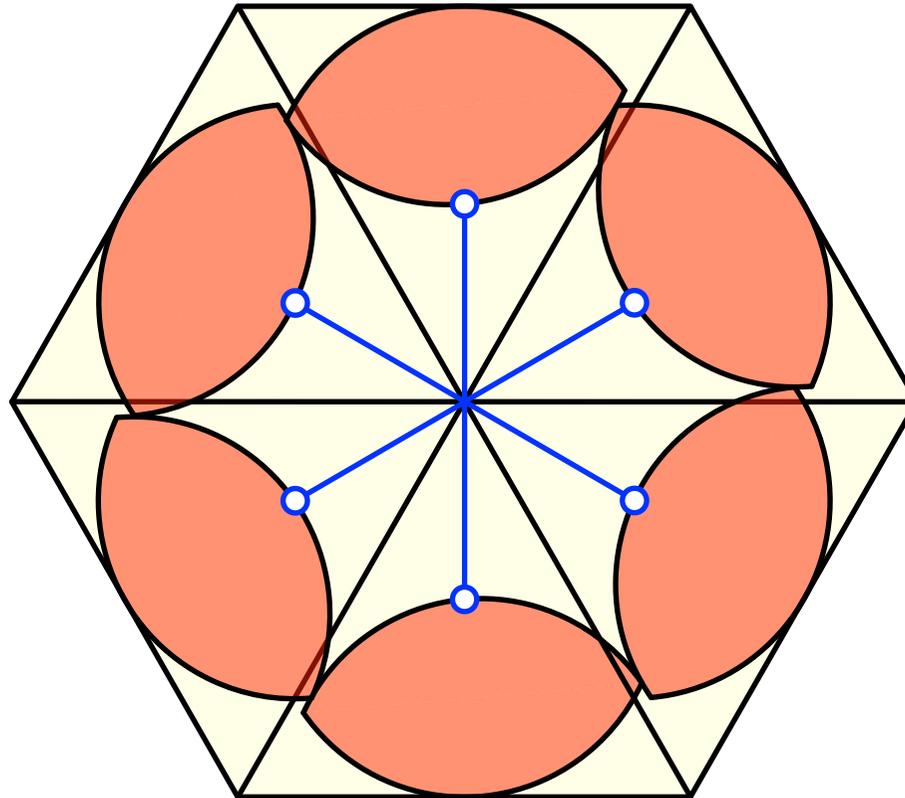
Modell

Beweis



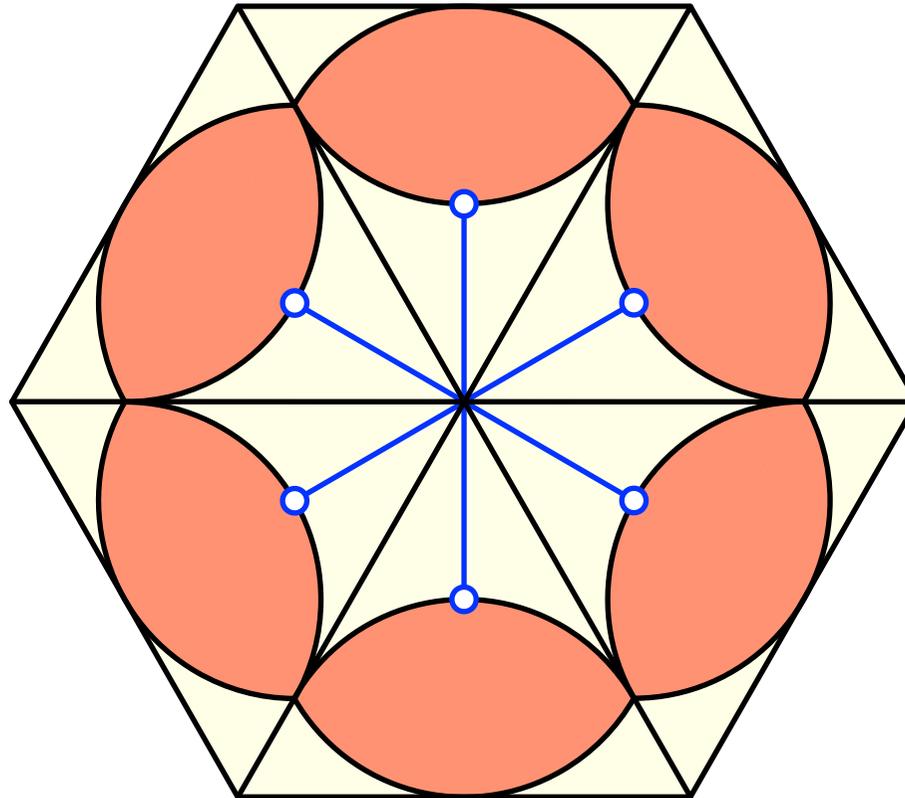
Modell

Beweis



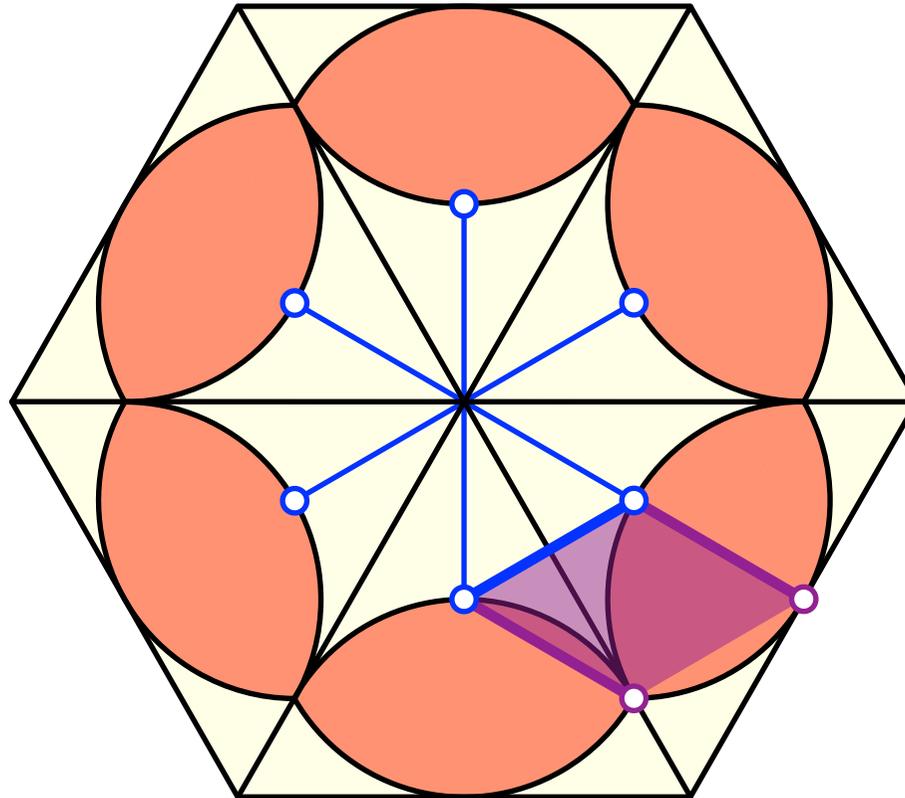
Modell

Beweis



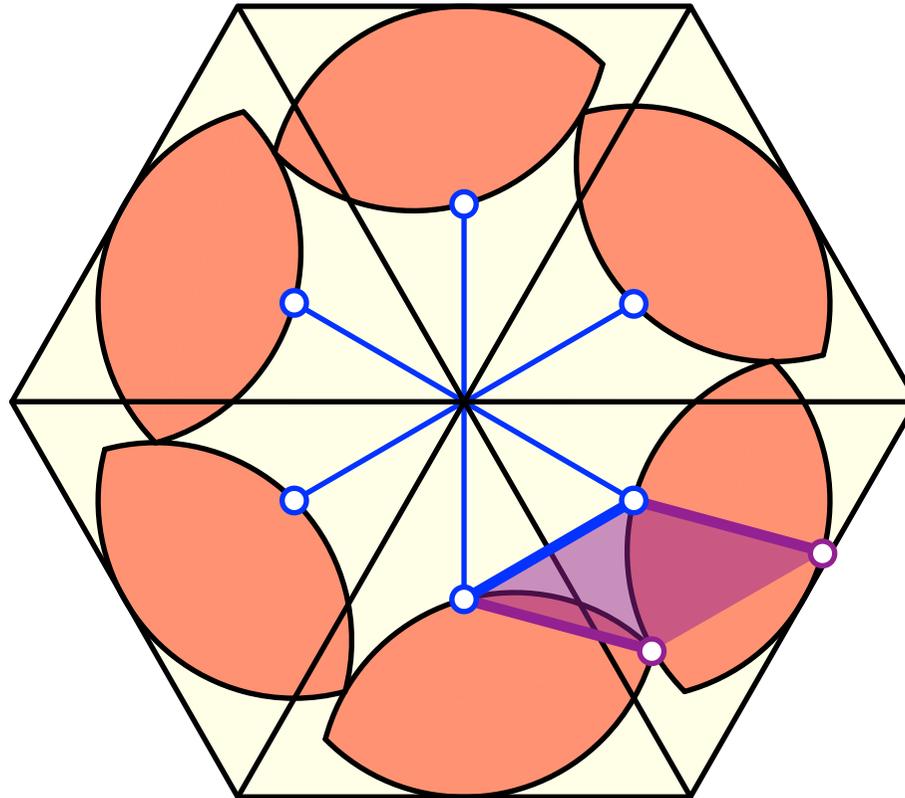
Modell

Beweis



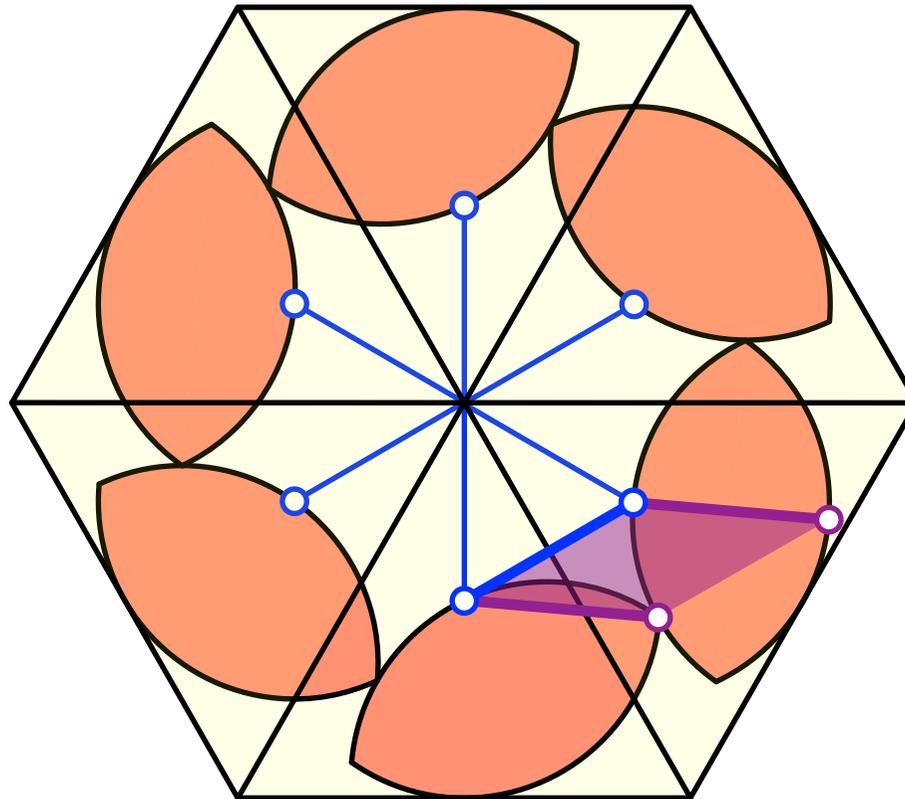
Modell

Beweis



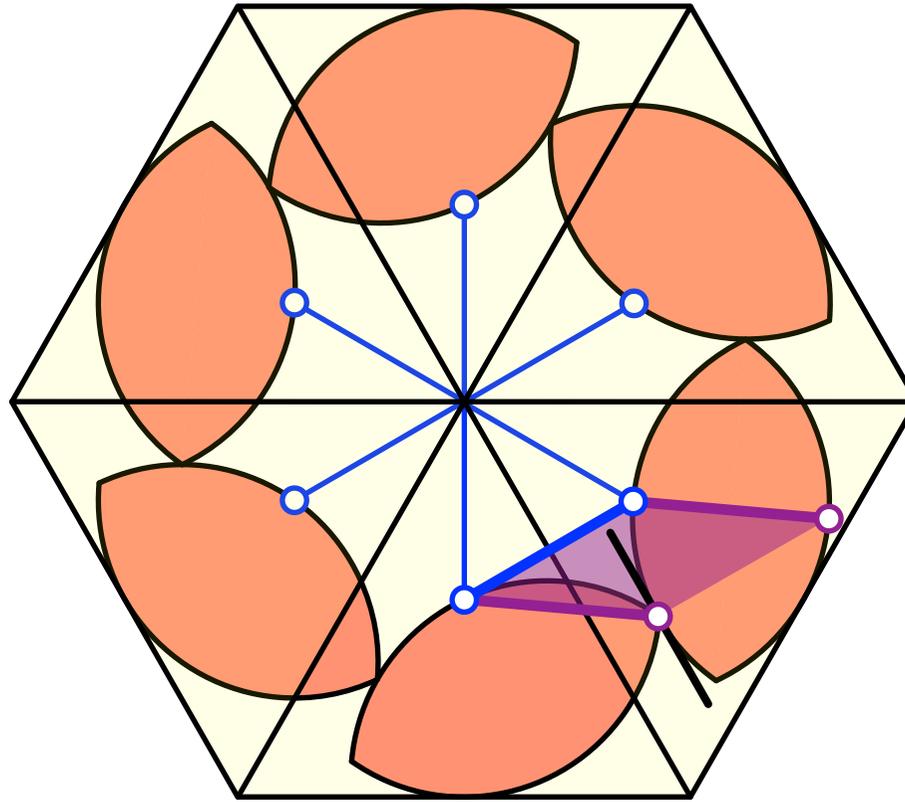
Modell

Beweis



Modell

Beweis



Modell

Beweis



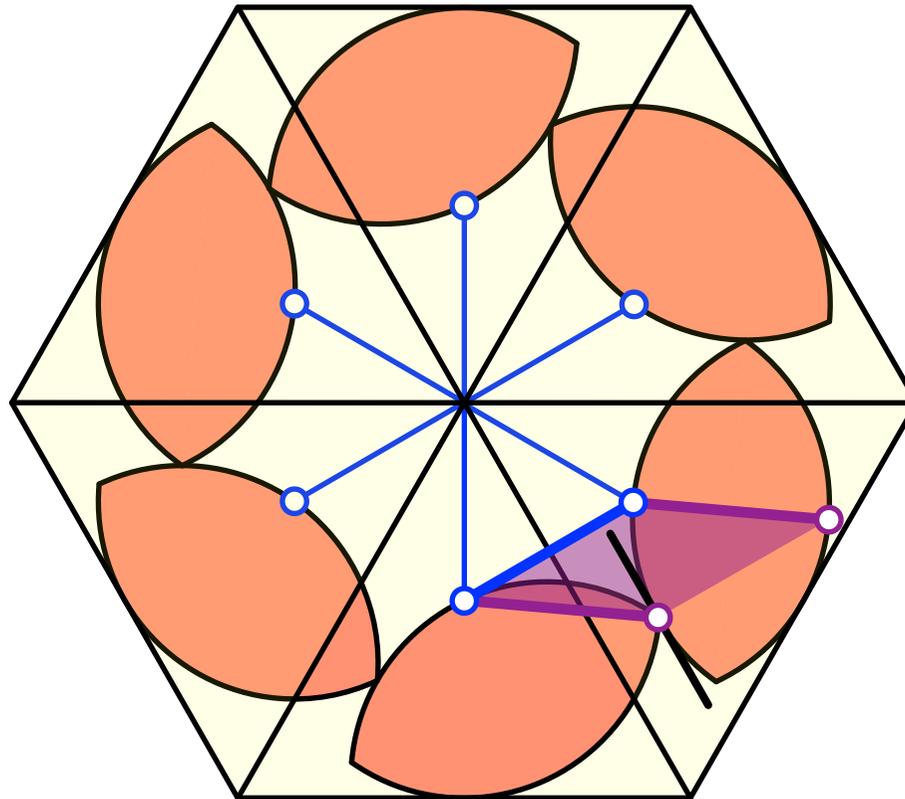
Modell

Beweis



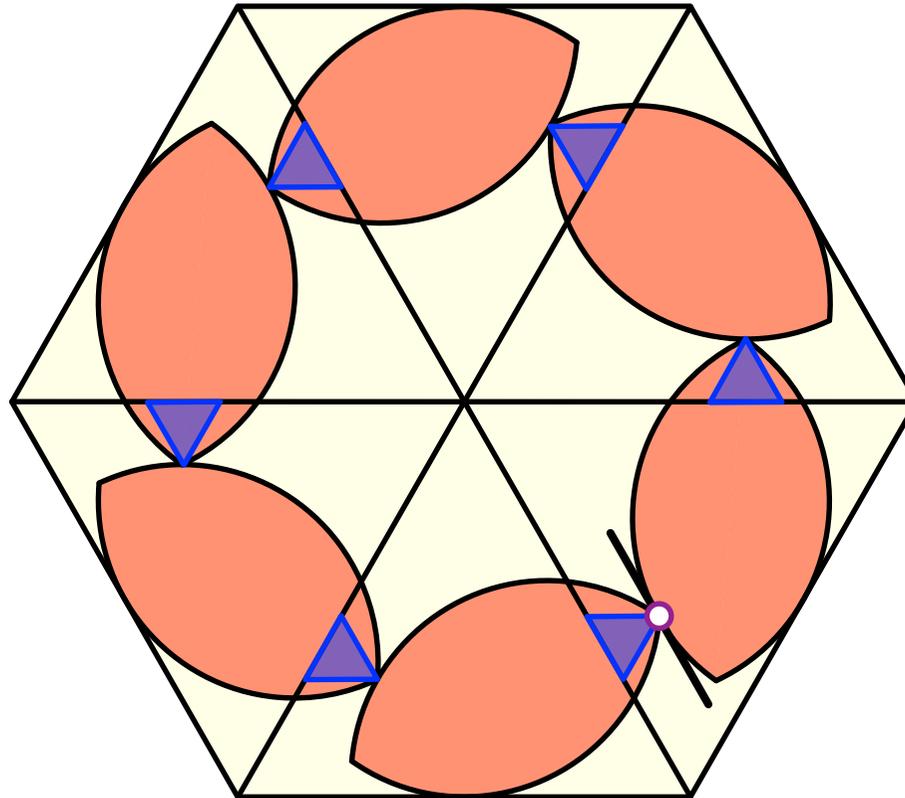
Modell

Beweis



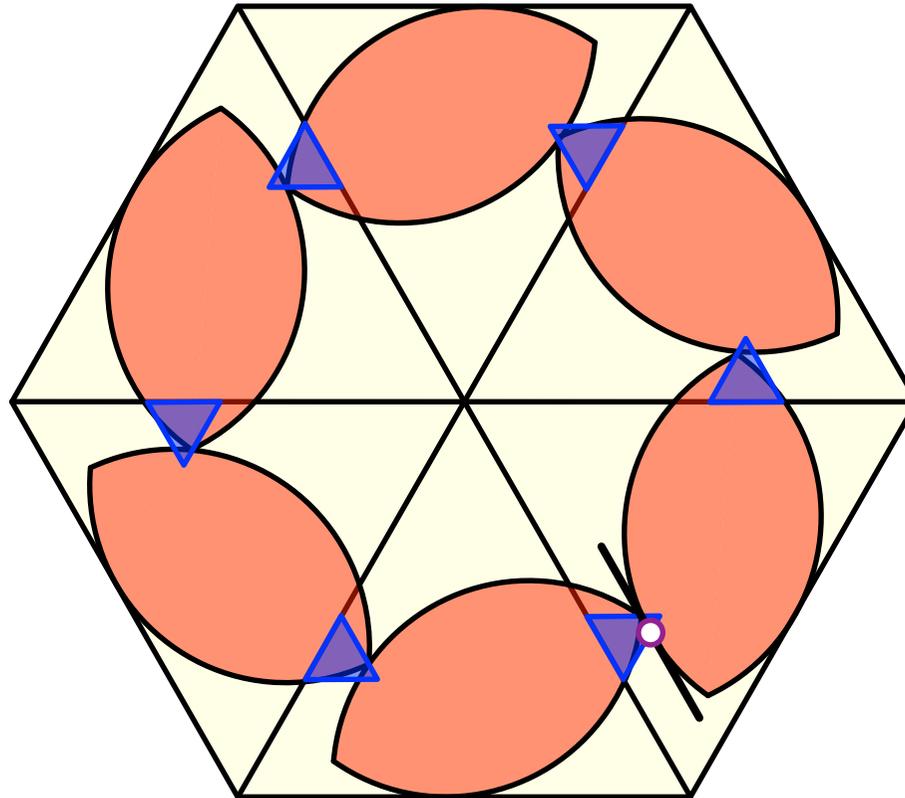
Modell

Beweis

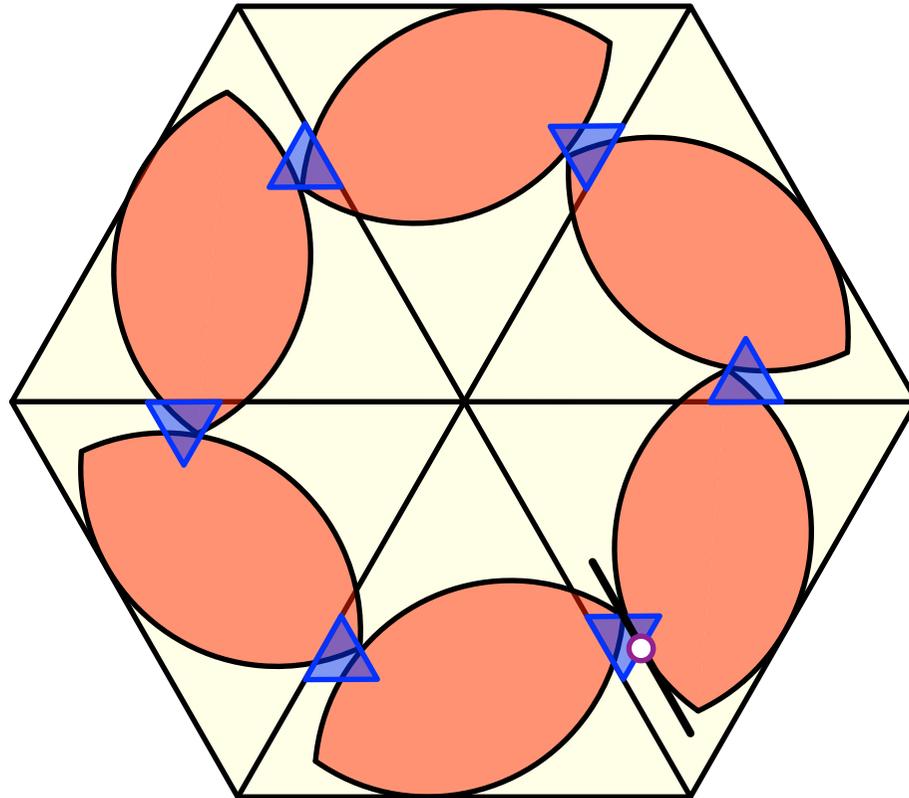


Modell

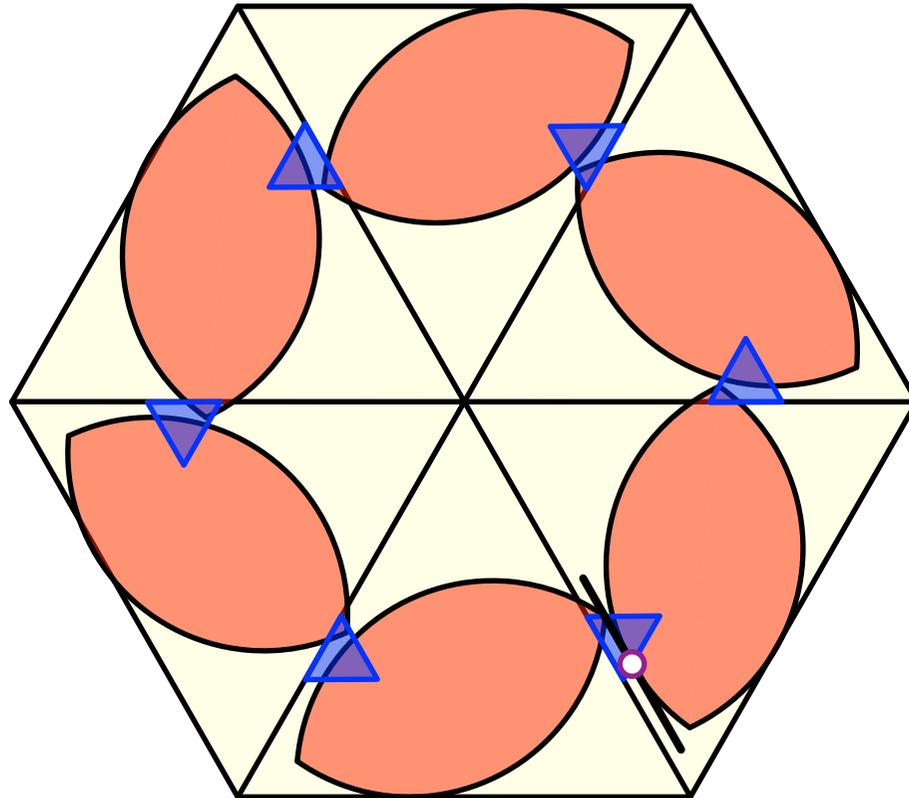
Beweis



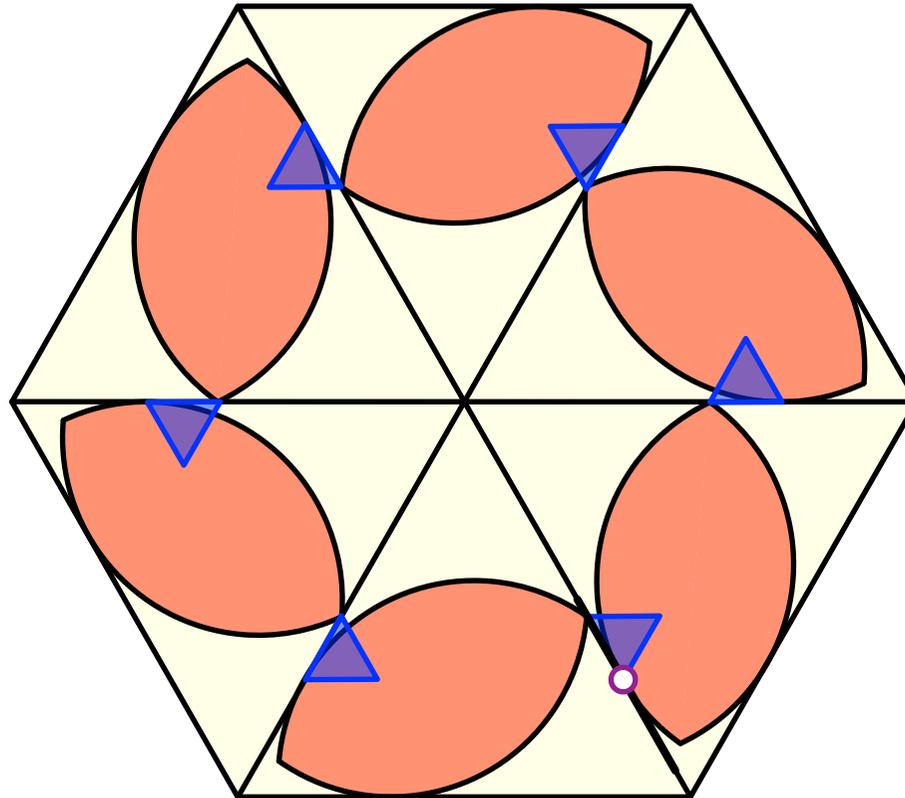
Beweis



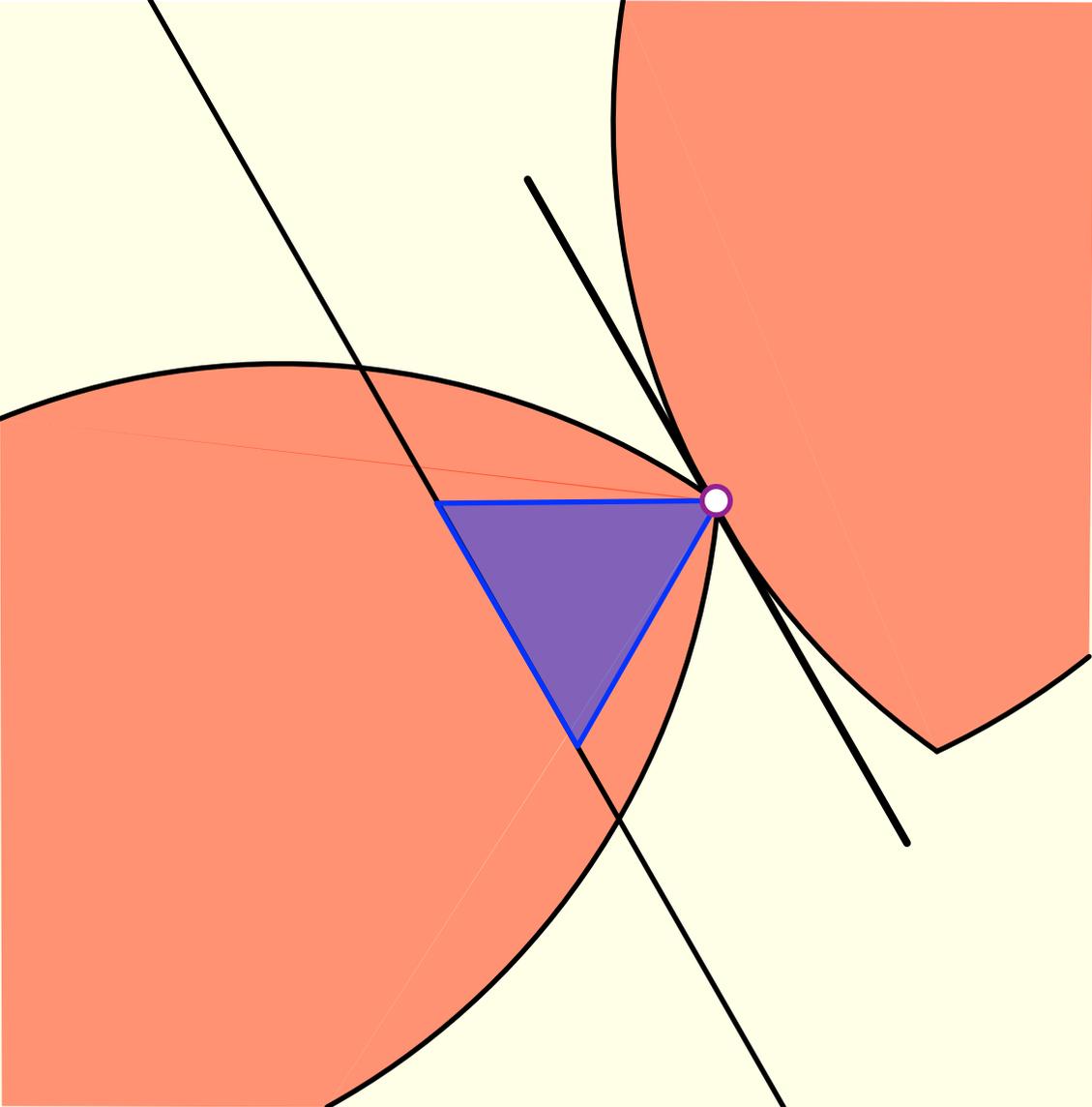
Beweis



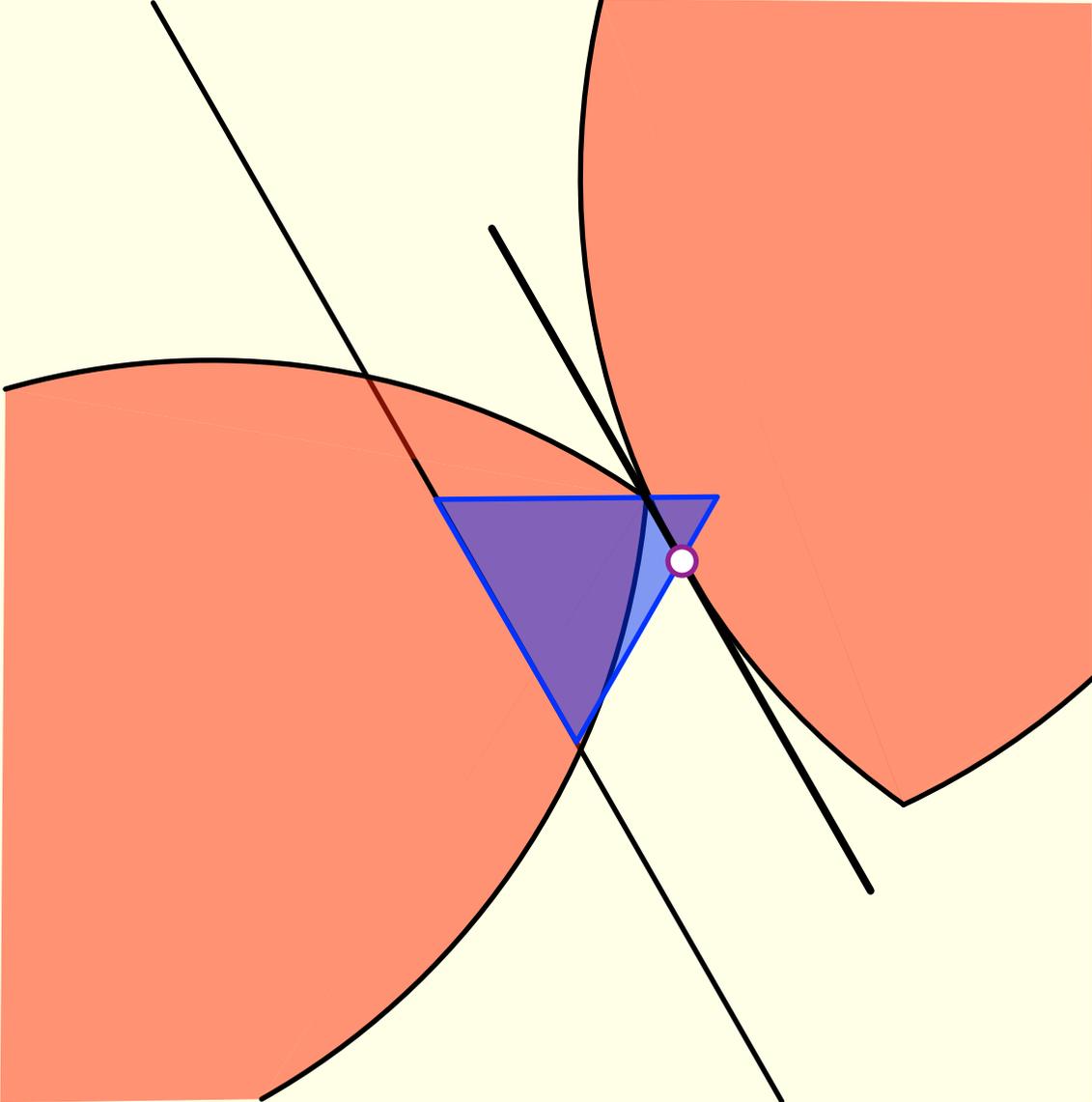
Beweis



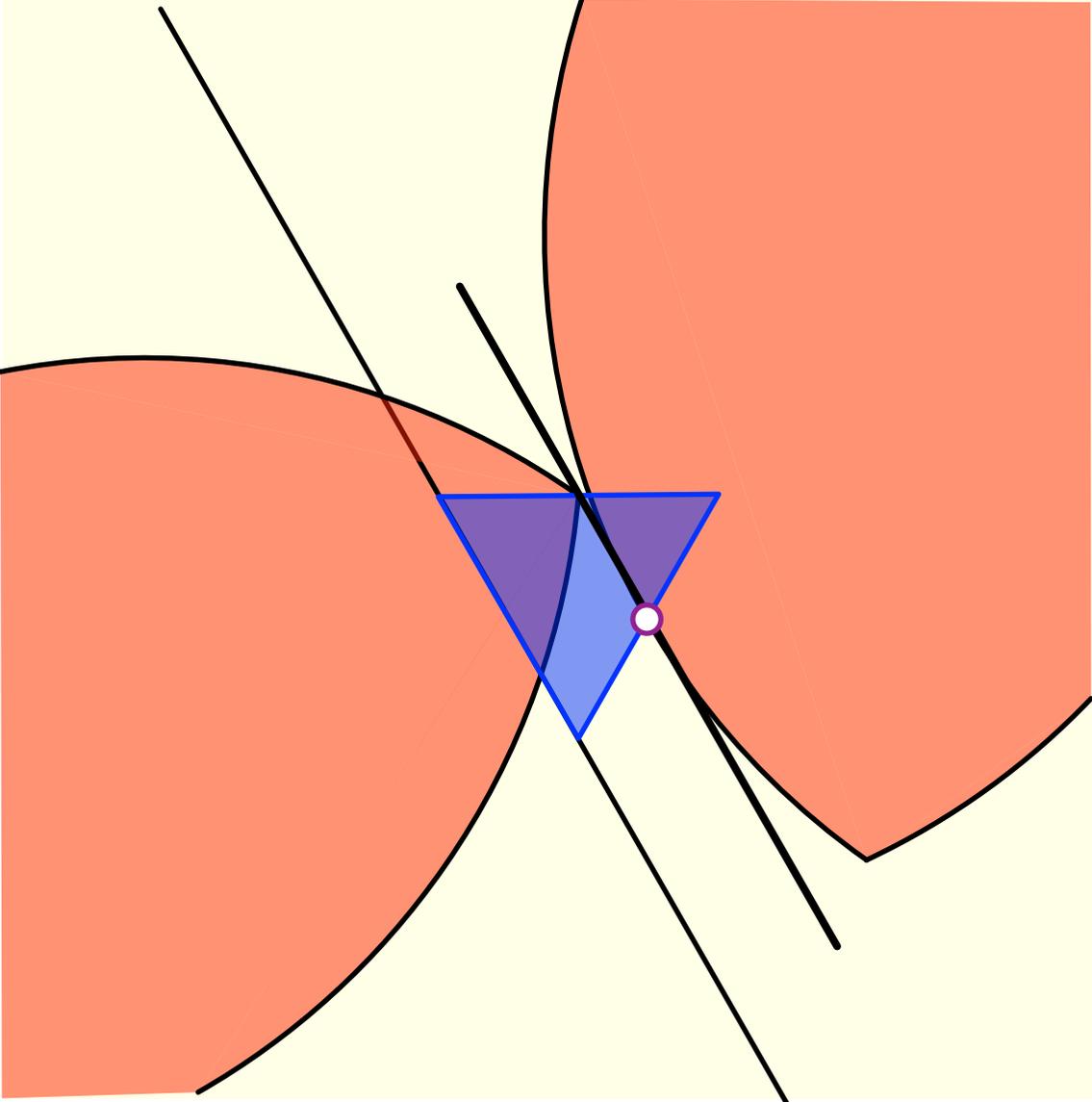
Zoom



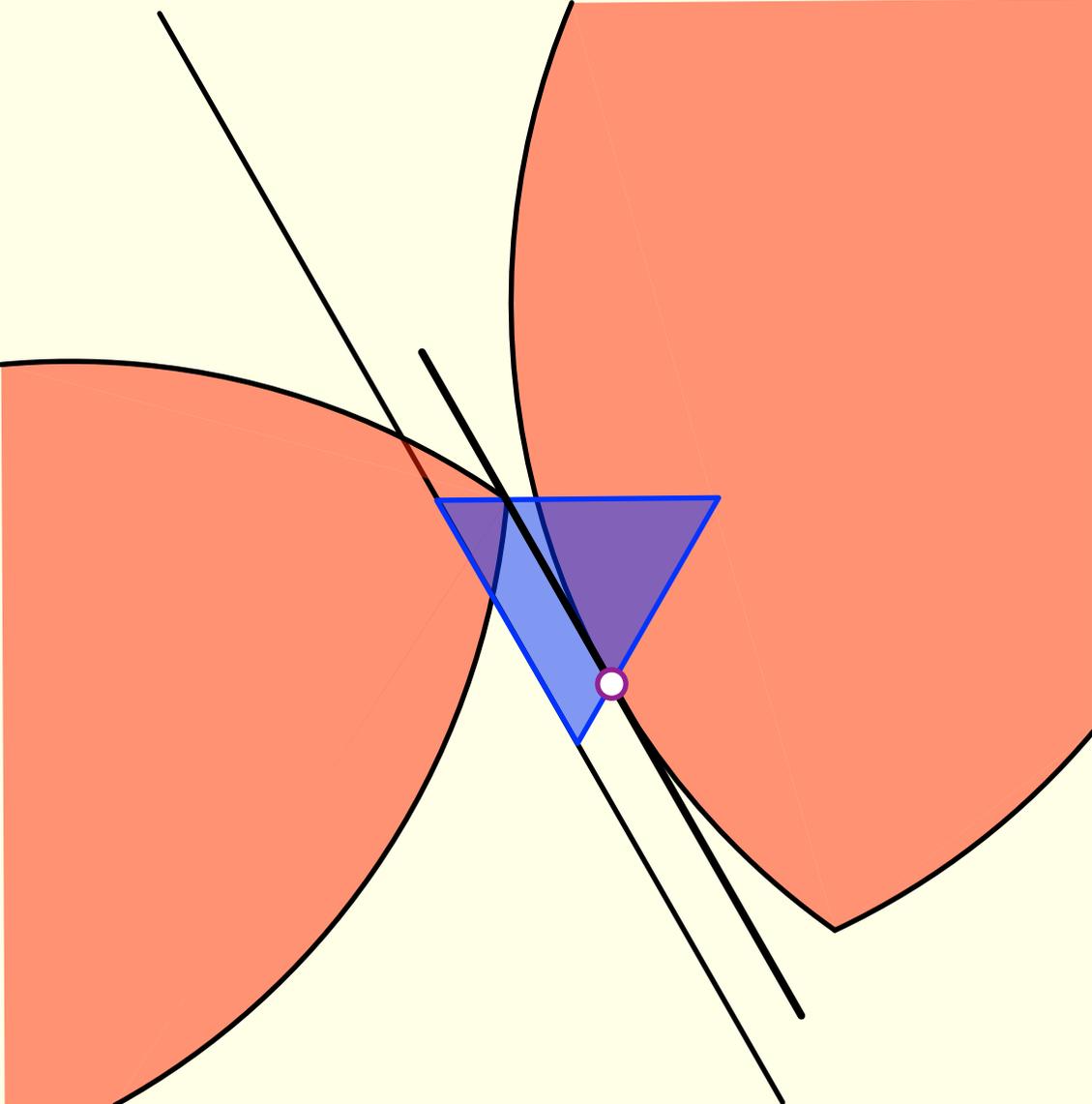
Zoom



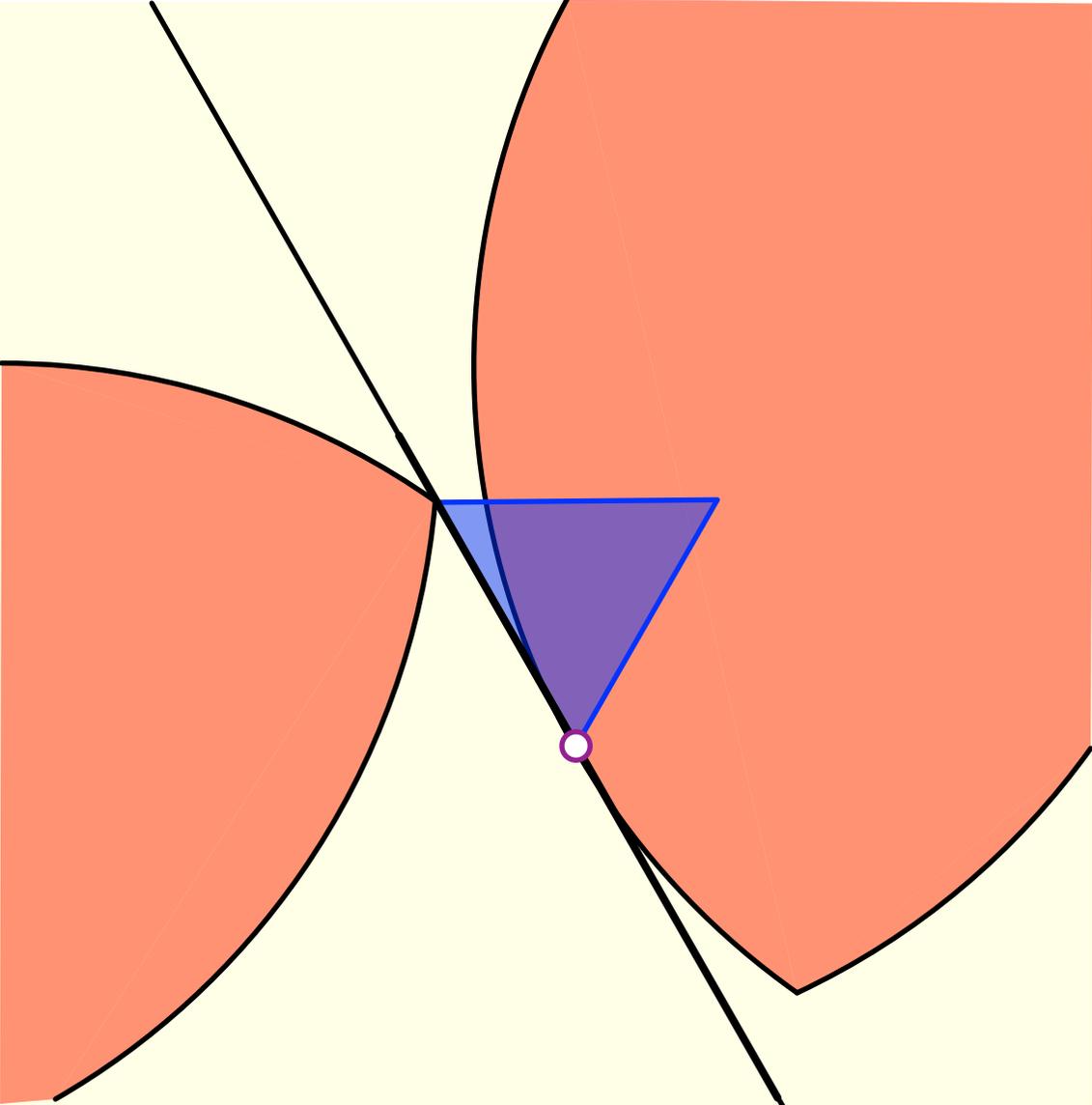
Zoom



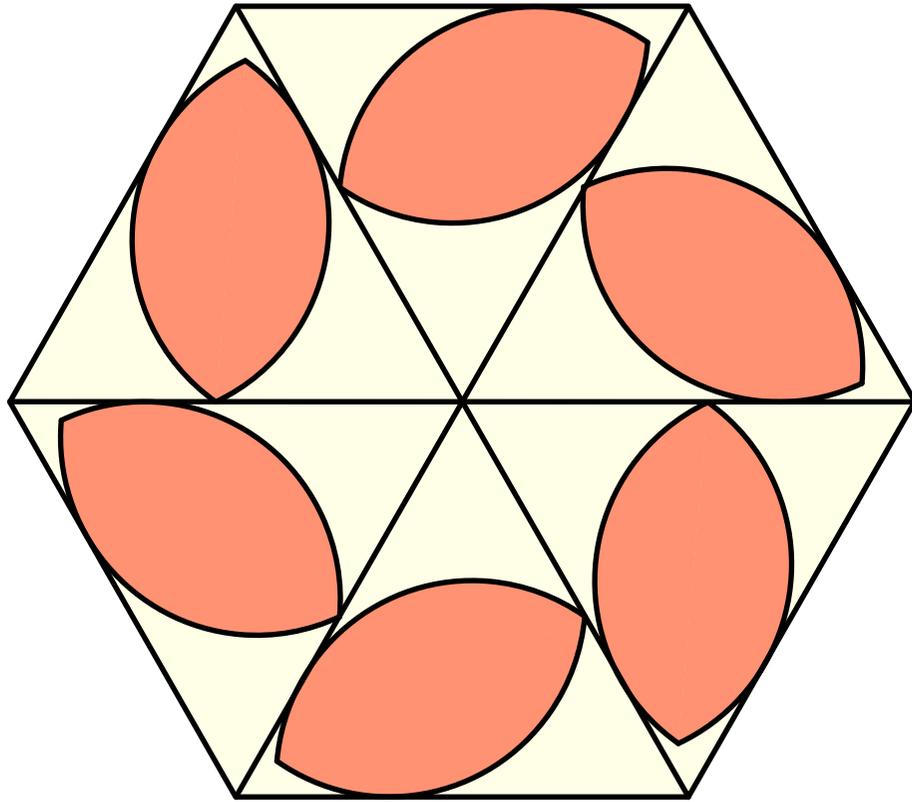
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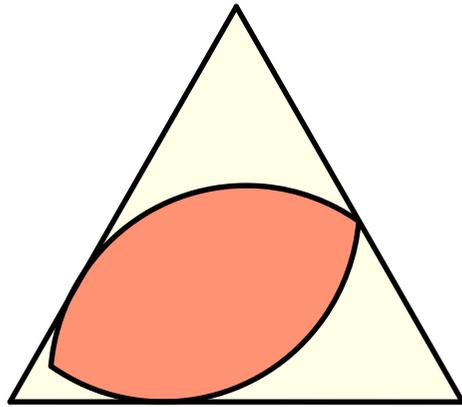
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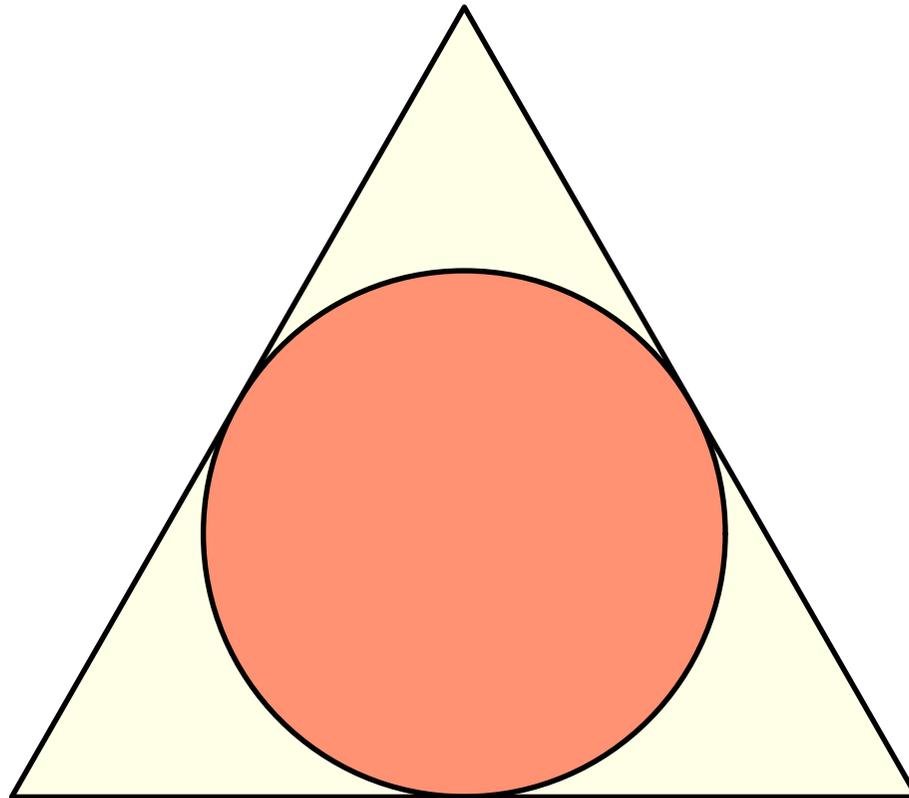
Beweis



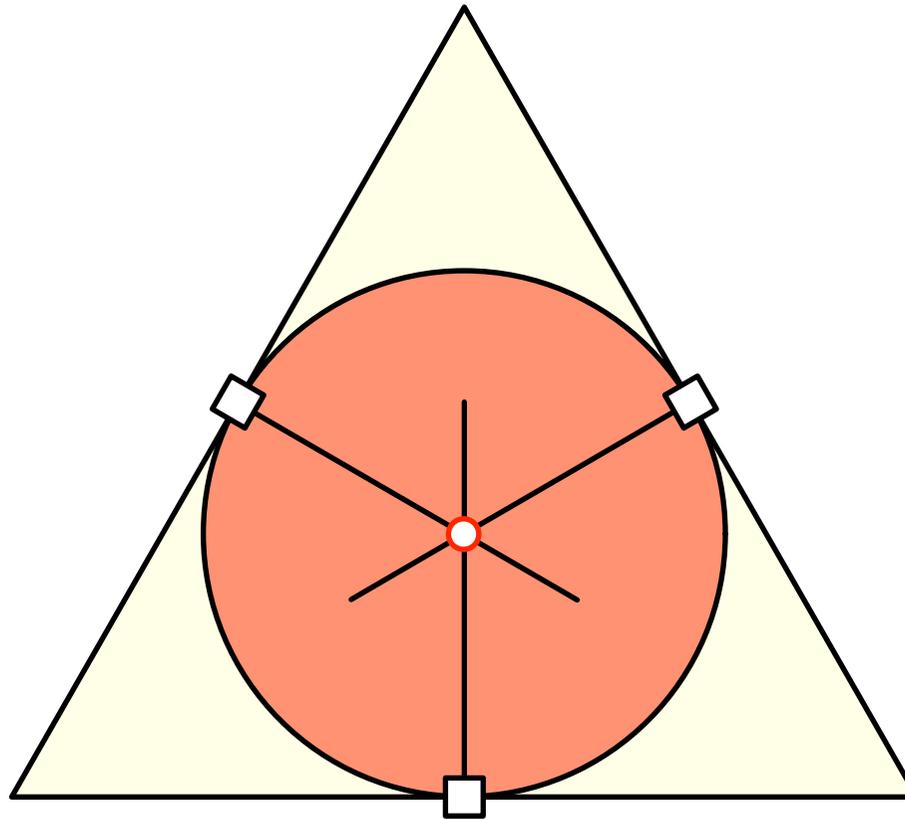
Beweis



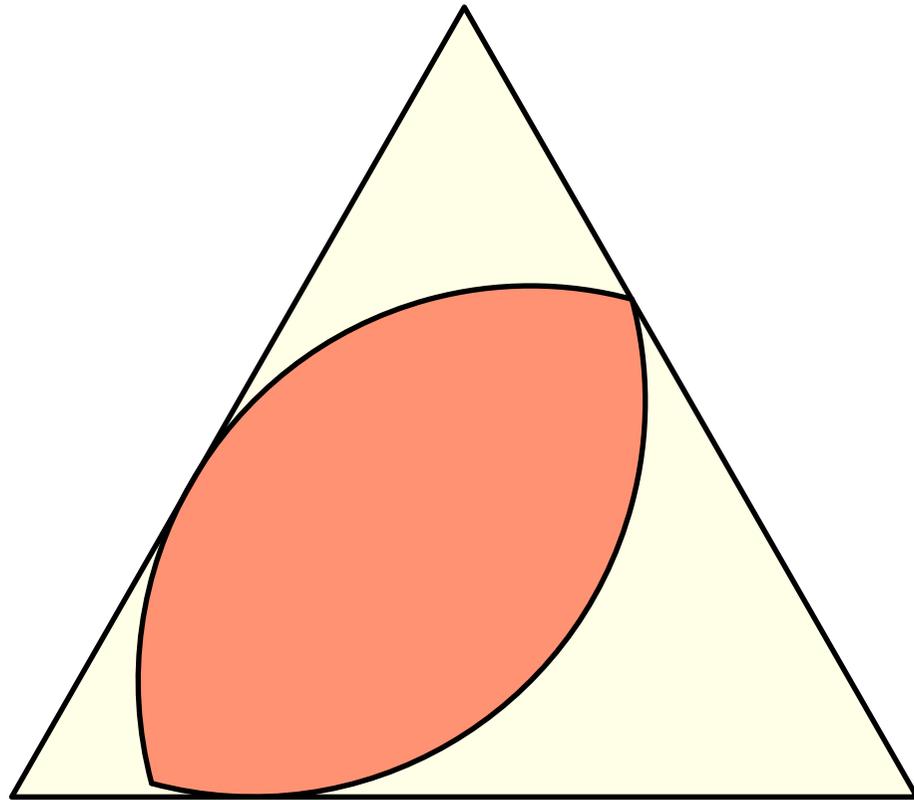
180°-“Zweieck“: Inkreis



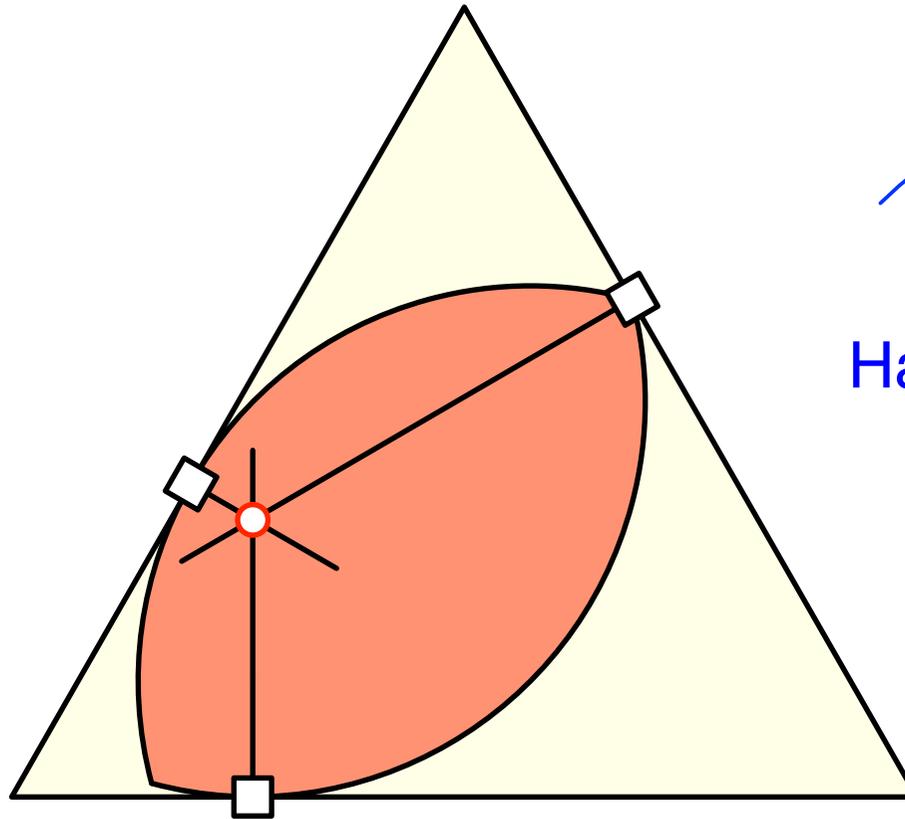
180°-“Zweieck“: Inkreis



120°-Zweieck



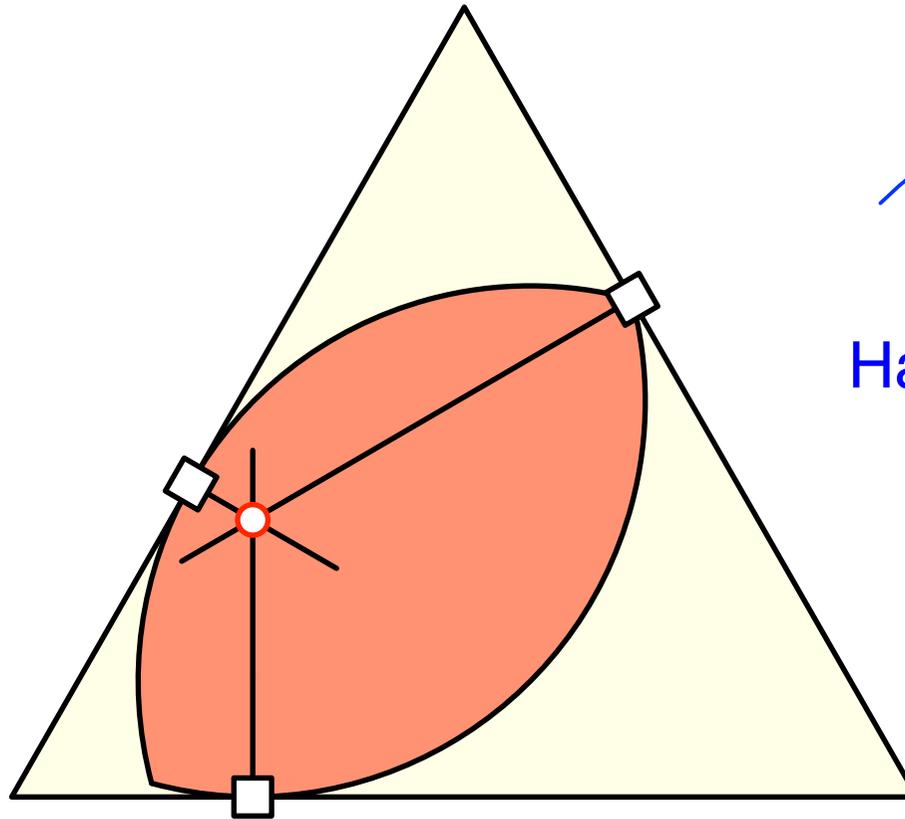
120°-Zweieck



Hans Freudenthal
1905-1990

120°-Zweieck

Momentaner Drehpunkt



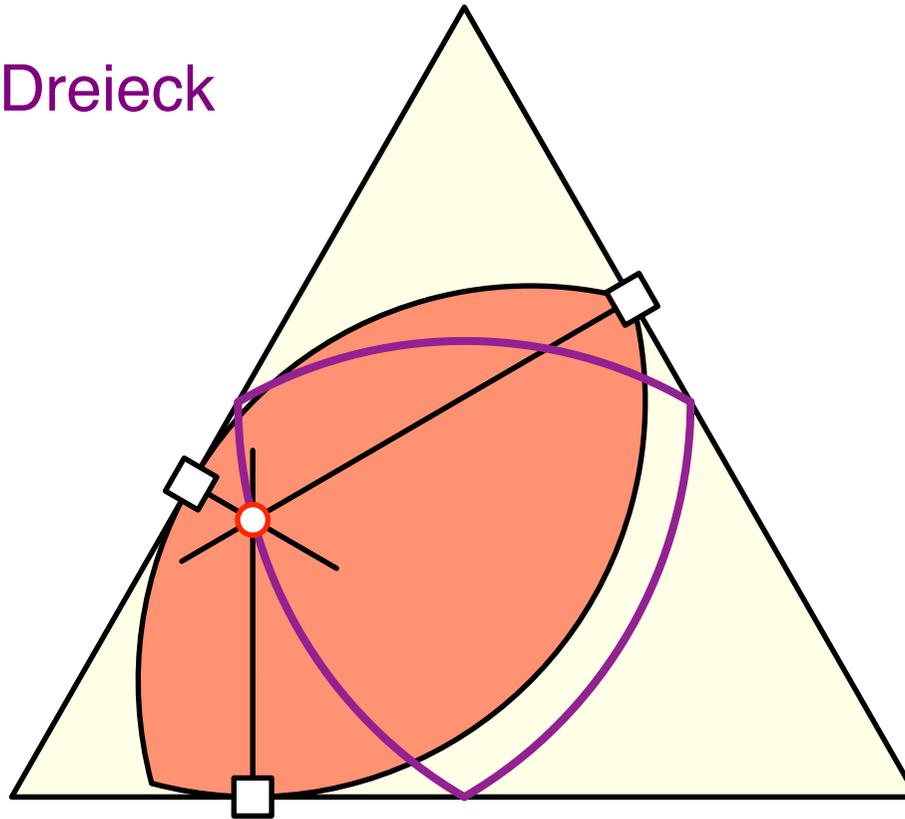
Hans Freudenthal
1905-1990

120°-Zweieck

Momentaner Drehpunkt

Ortslinie

relativ zum Dreieck

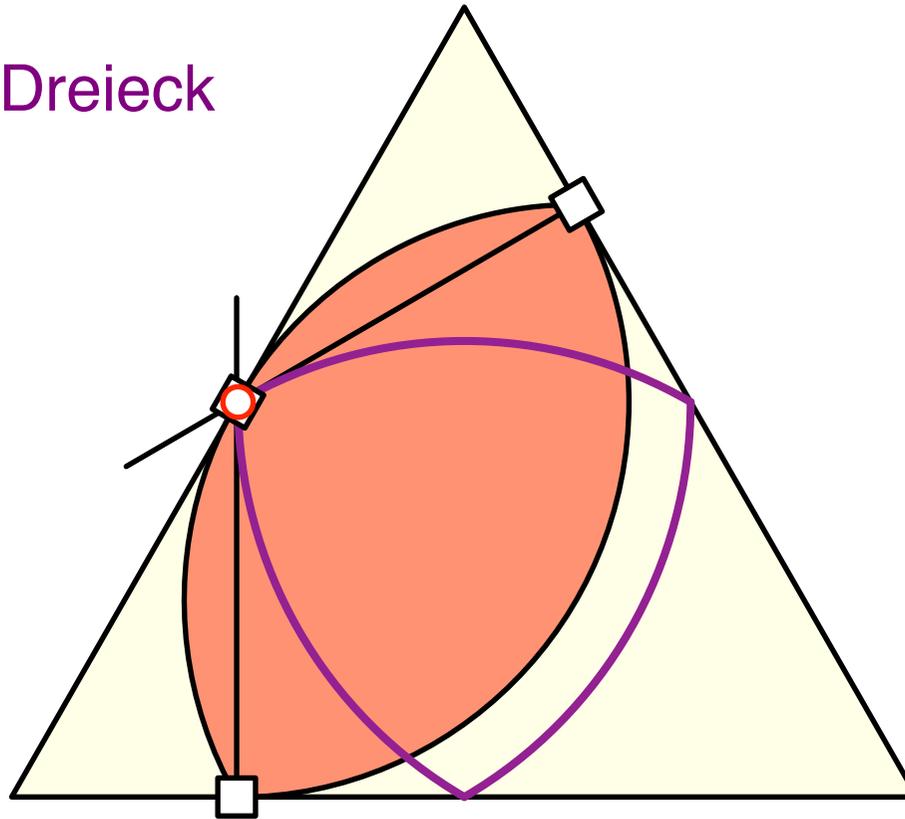


120°-Zweieck

Momentaner Drehpunkt

Ortslinie

relativ zum Dreieck

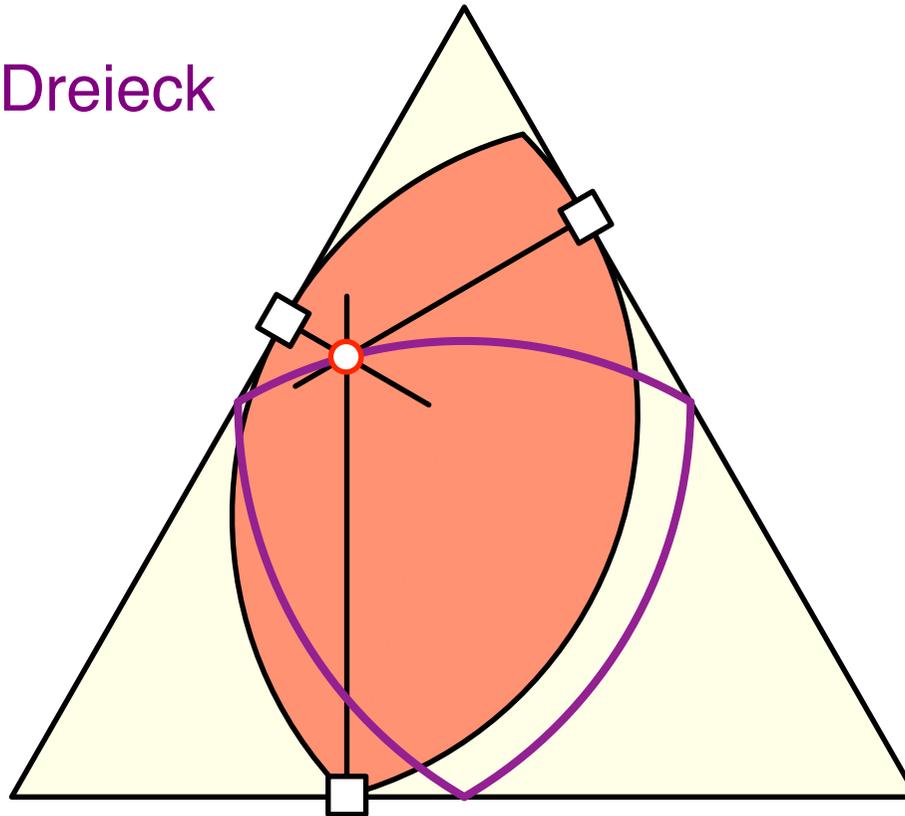


120°-Zweieck

Momentaner Drehpunkt

Ortslinie

relativ zum Dreieck

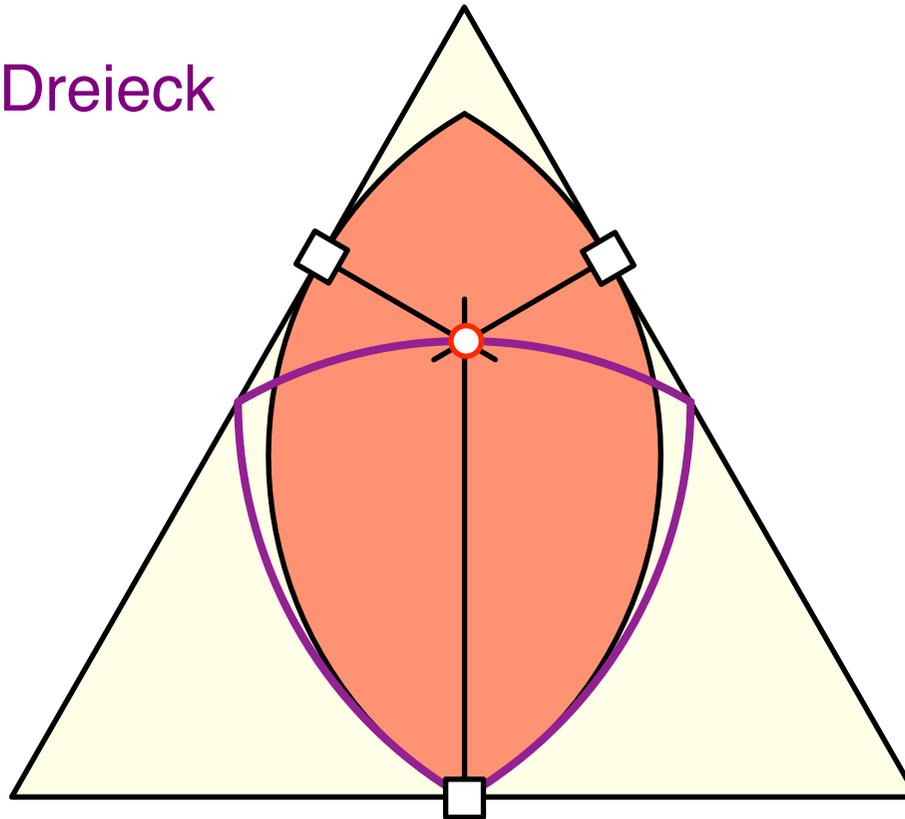


120°-Zweieck

Momentaner Drehpunkt

Ortslinie

relativ zum Dreieck

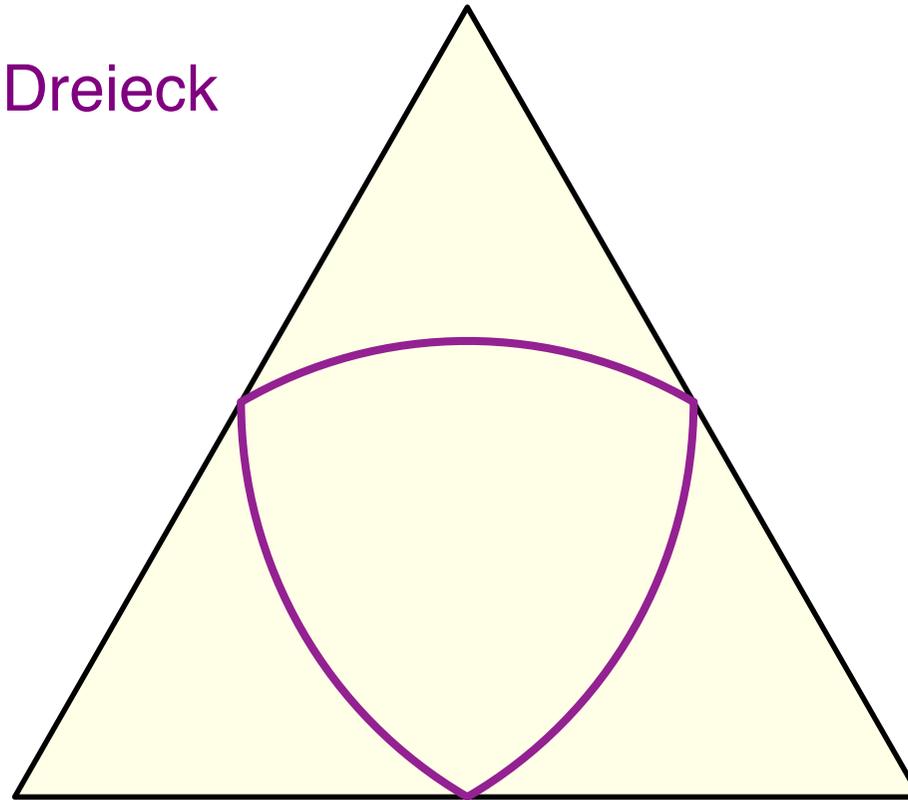


120°-Zweieck

Momentaner Drehpunkt

Ortslinie

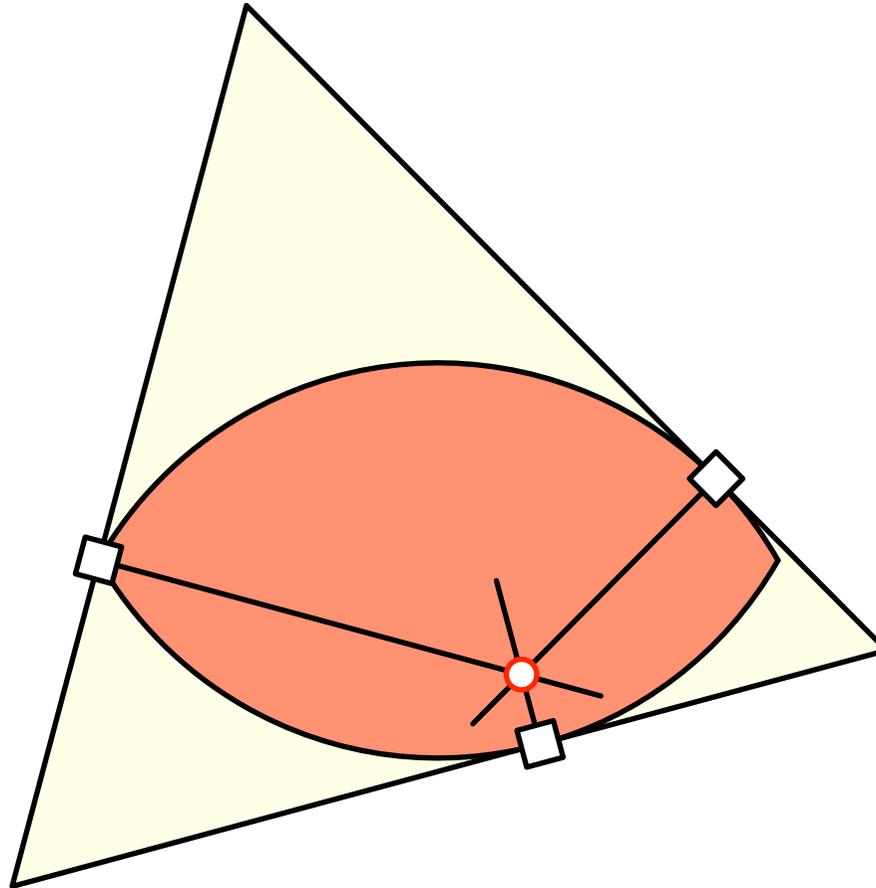
relativ zum Dreieck



Reuleaux-Dreieck

120°-Zweieck

Momentaner Drehpunkt

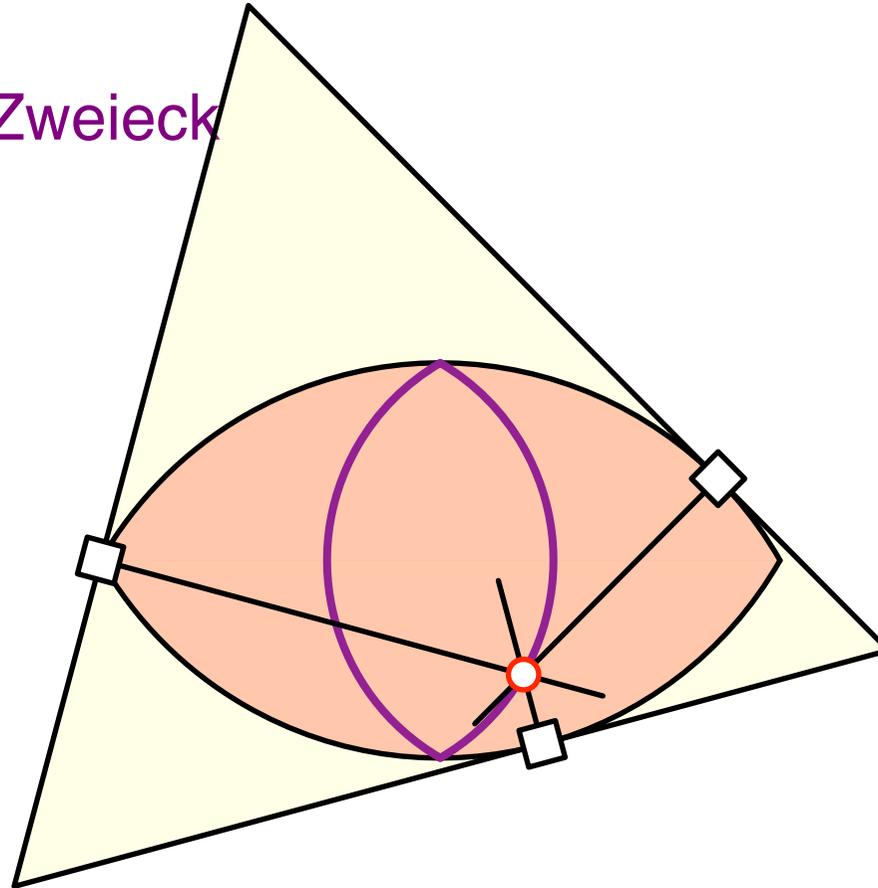


120°-Zweieck

Momentaner Drehpunkt

Ortslinie

relativ zum Zweieck

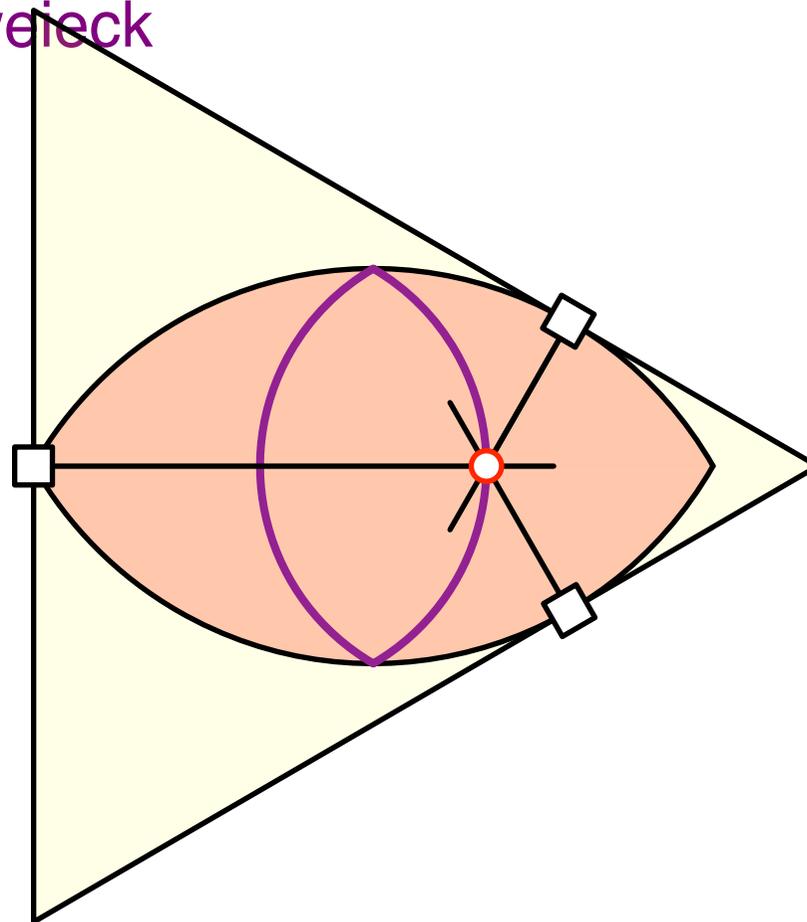


120°-Zweieck

Momentaner Drehpunkt

Ortslinie

relativ zum Zweieck

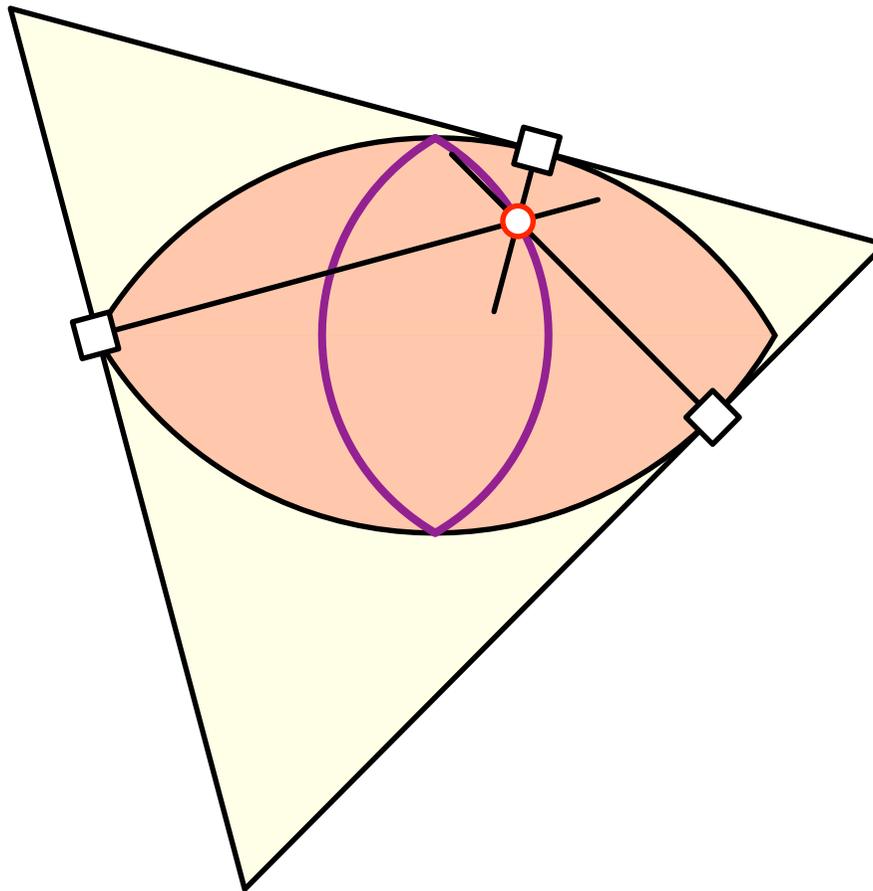


120°-Zweieck

Momentaner Drehpunkt

Ortslinie

relativ zum Zweieck

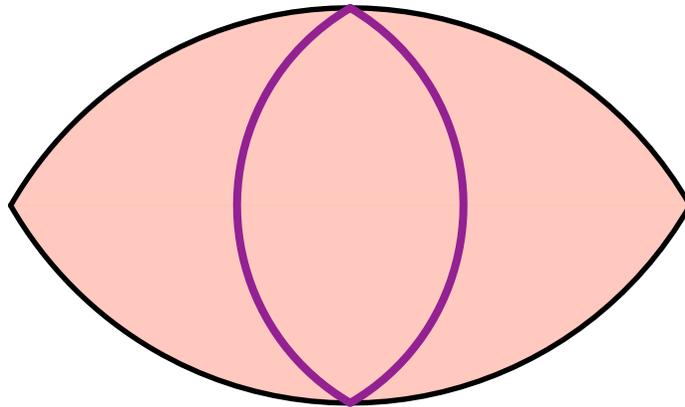


120°-Zweieck

Momentaner Drehpunkt

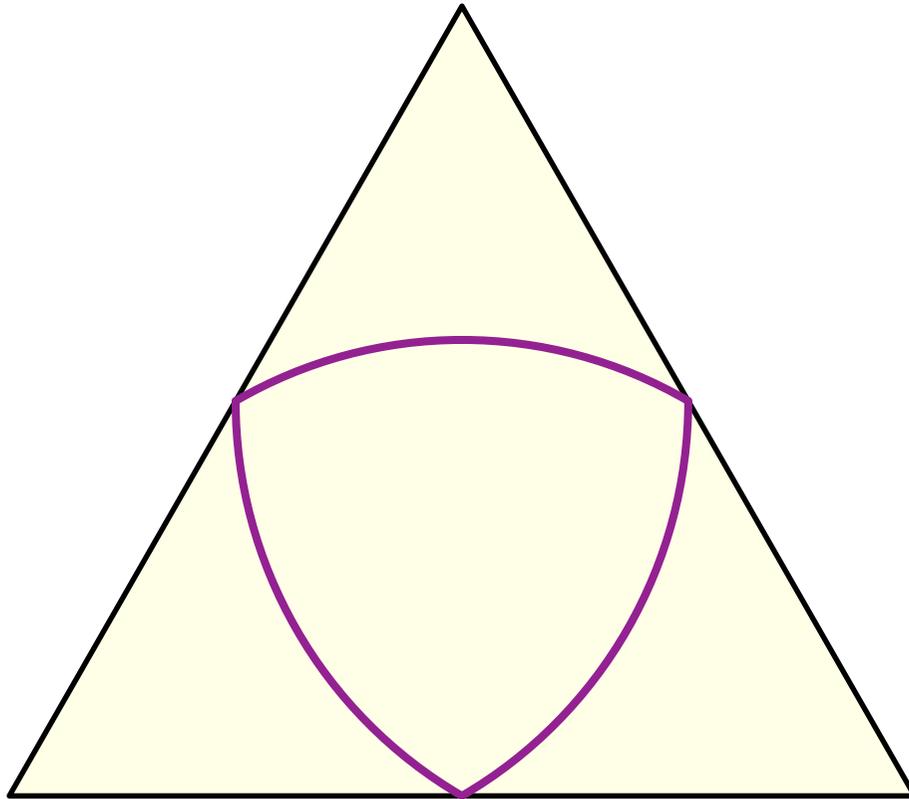
Ortslinie

relativ zum Zweieck

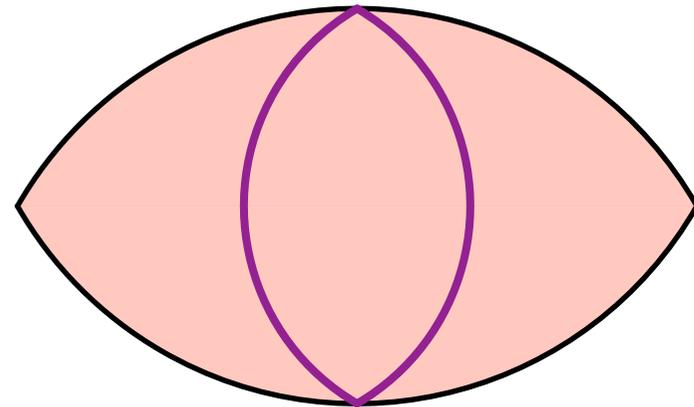


120°-Zweieck

*There are more things
in heaven and earth, Horatio,
Than are dreamt of in your philosophy.*



Reuleaux-Dreieck

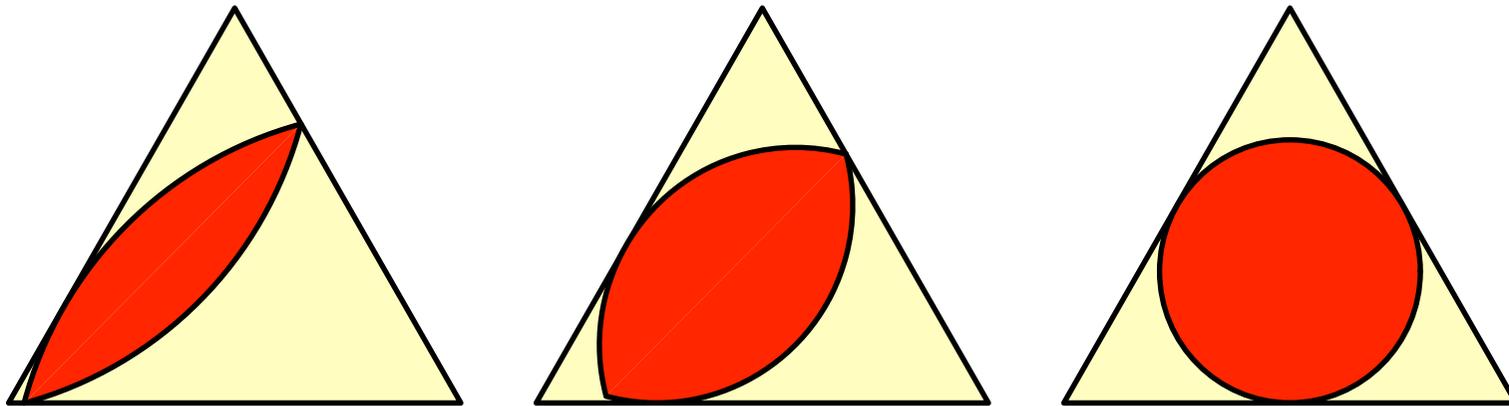


120°-Zweieck

Gleiche Punktmenge, unterschiedliche Symmetrien

Reuleaux-Zweiecke im gleichseitigen Dreieck:

60°-Zweieck, 120°-Zweieck, 180°-Zweieck (Inkreis)



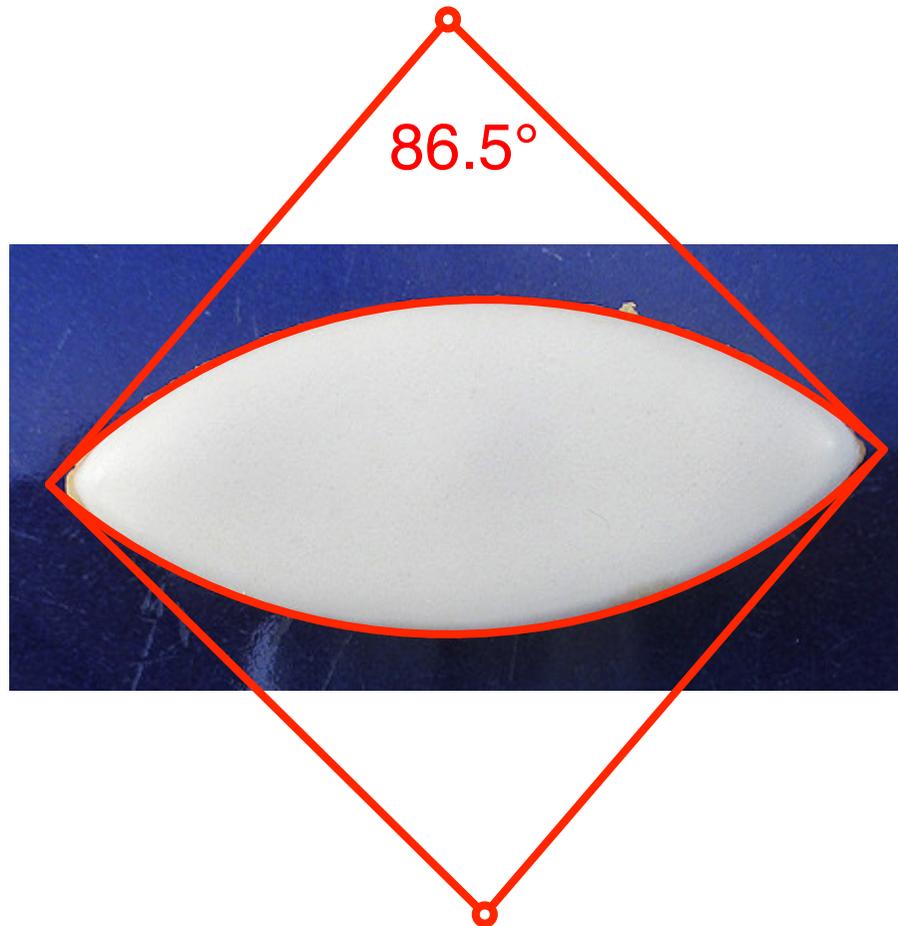
Calissons de Provence



Calissons de Provence



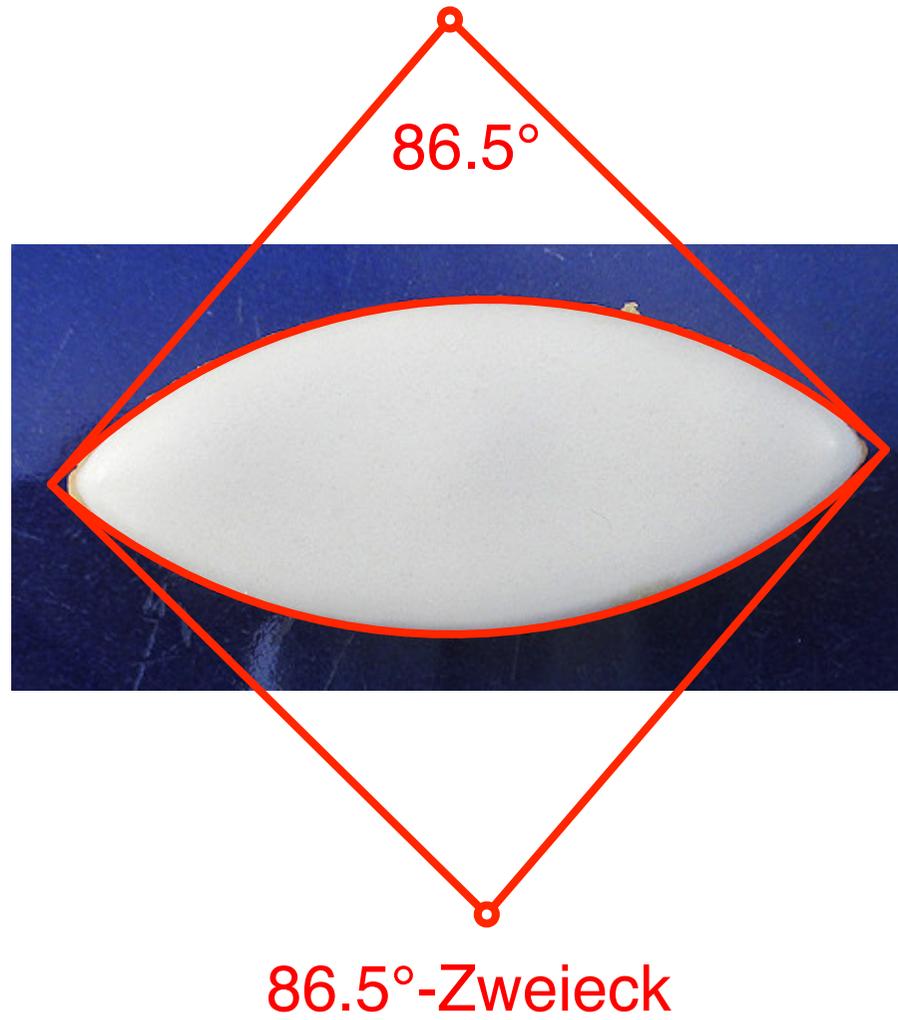
Calissons de Provence



86.5° -Zweieck

Kann nicht im Dreieck gedreht werden

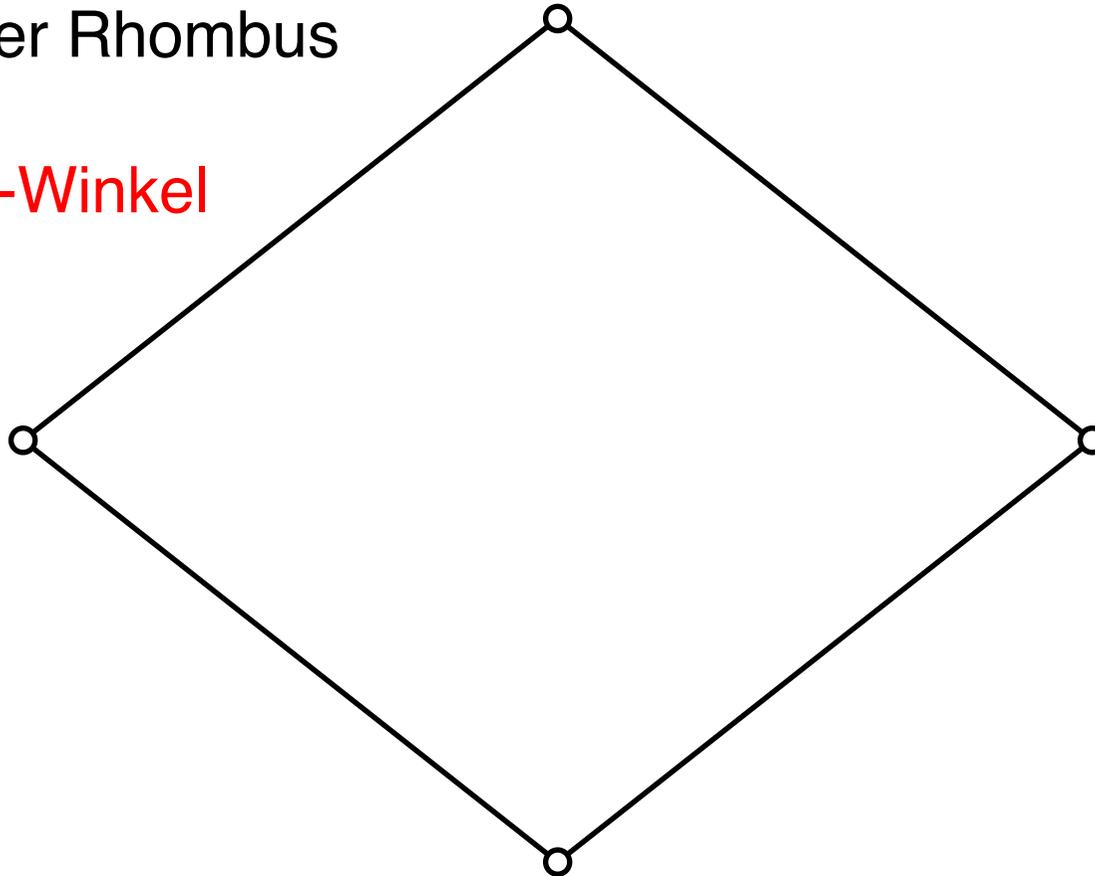
Beliebiges Zweieck



Beliebiges Zweieck

Beliebiger Rhombus

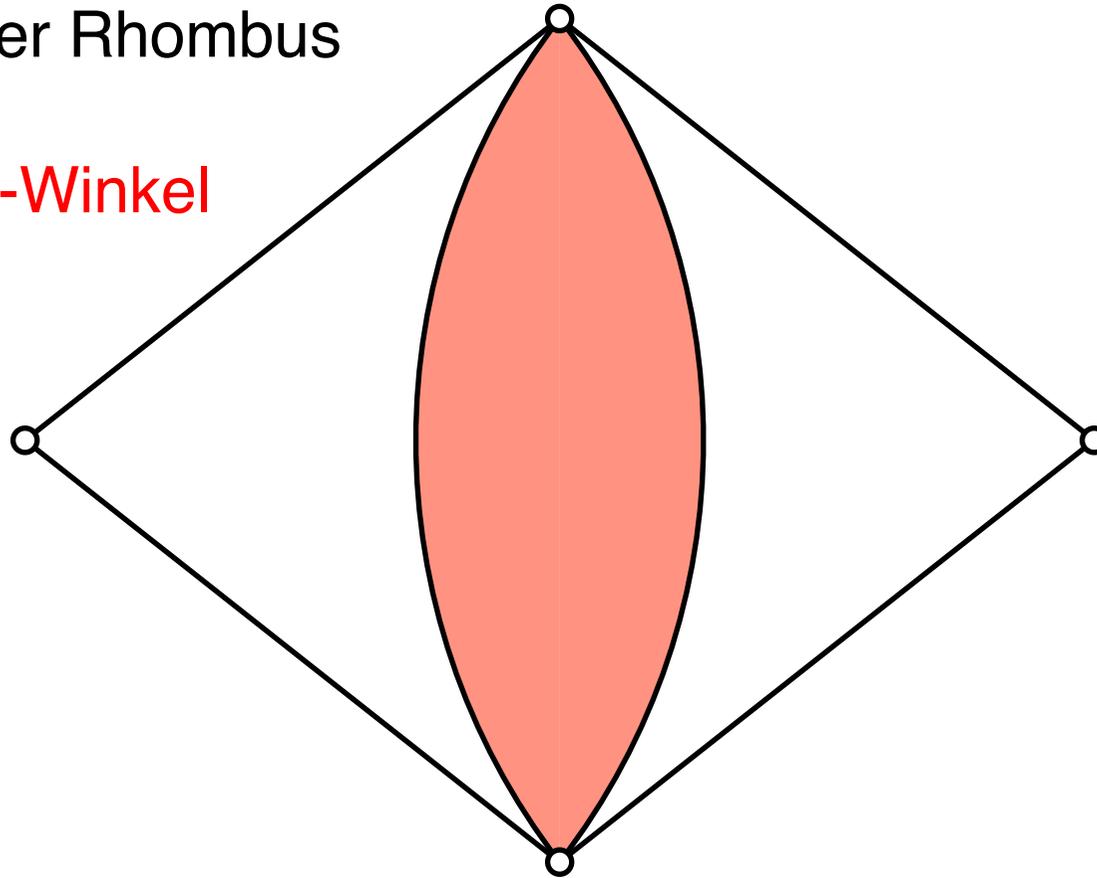
kein 60° -Winkel



Beliebiges Zweieck

Beliebiger Rhombus

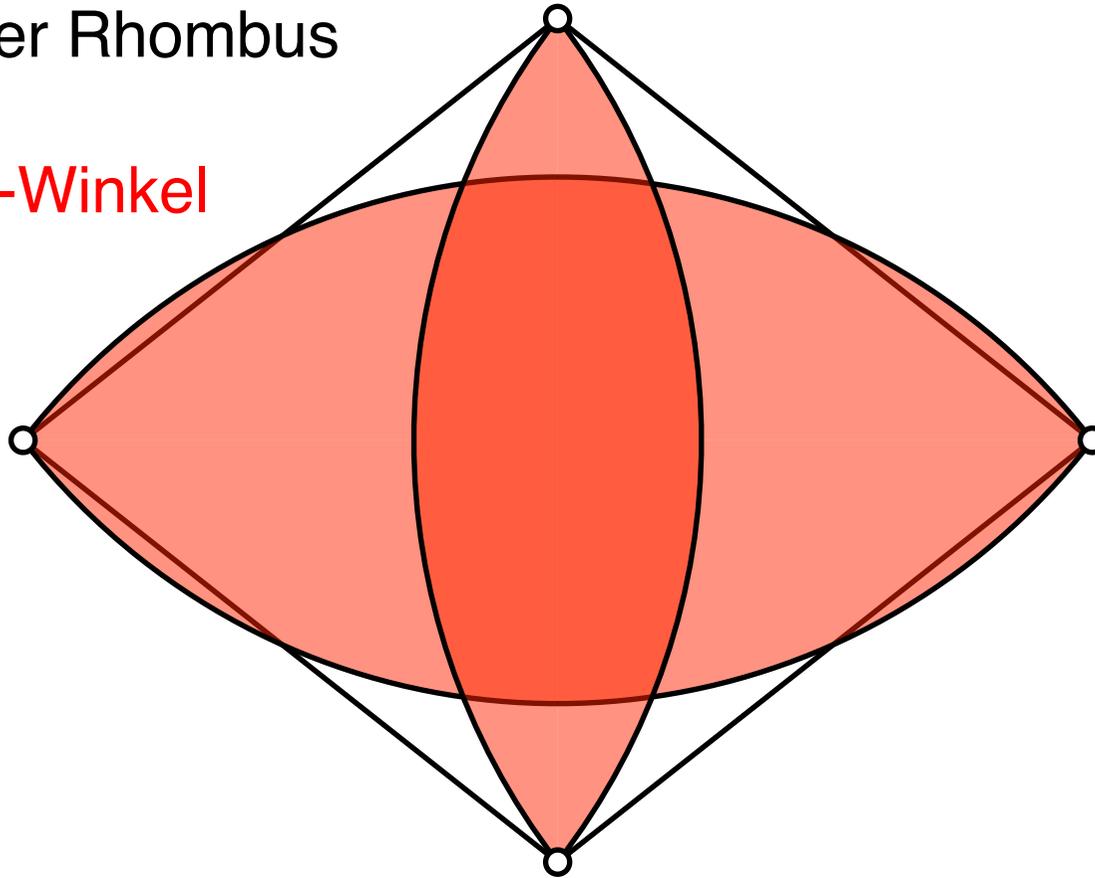
kein 60° -Winkel



Beliebiges Zweieck

Beliebiger Rhombus

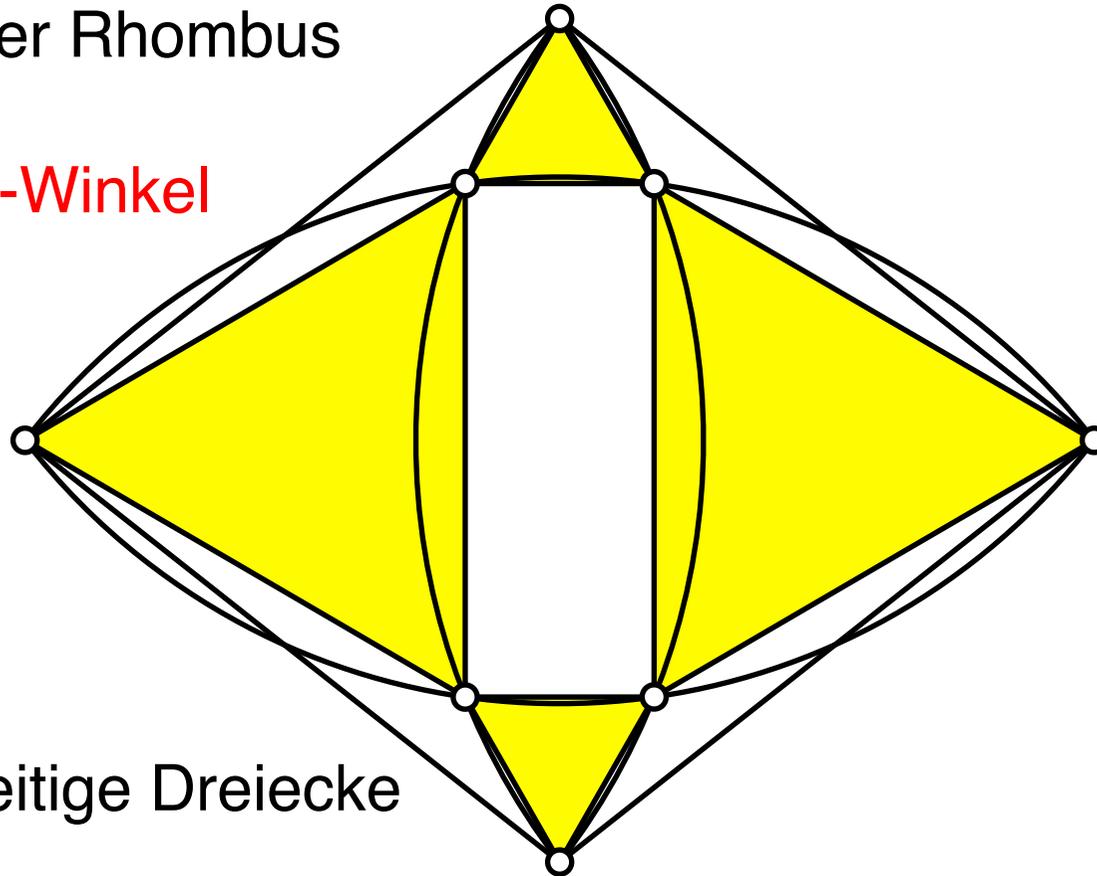
kein 60° -Winkel



Beliebiges Zweieck

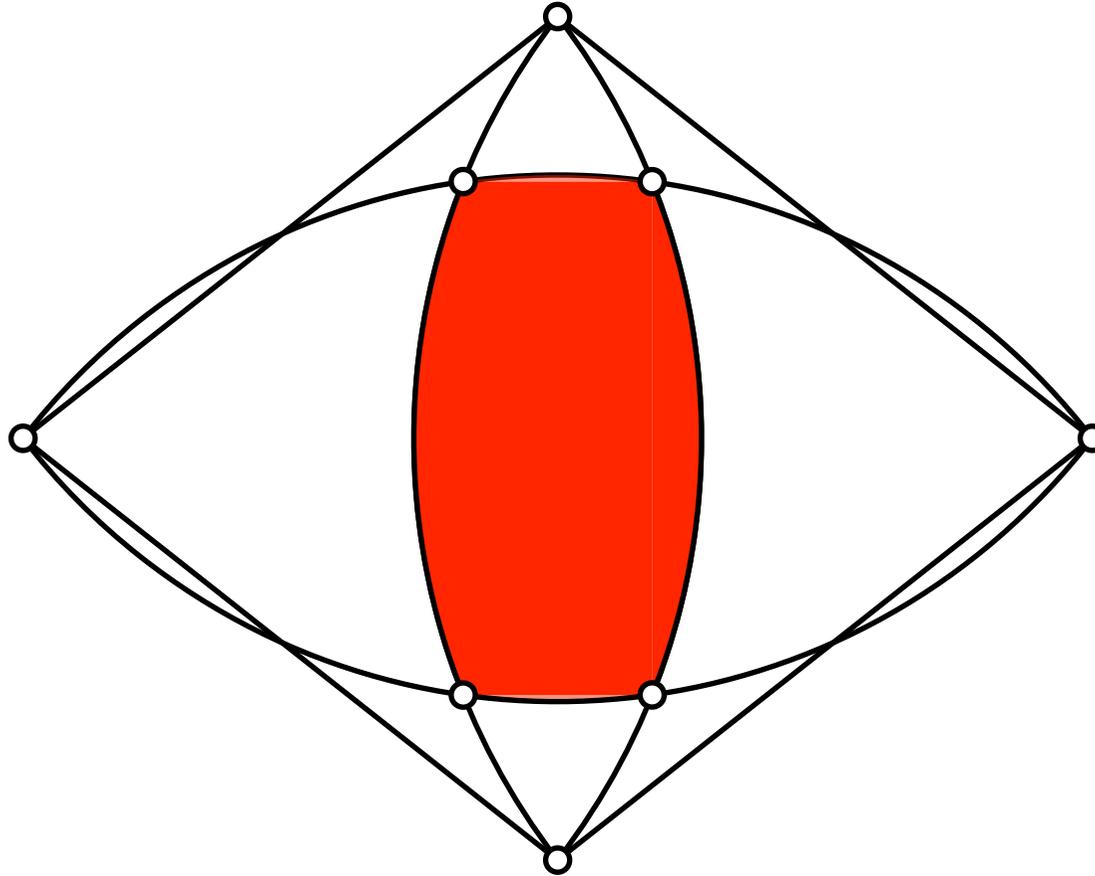
Beliebiger Rhombus

kein 60° -Winkel

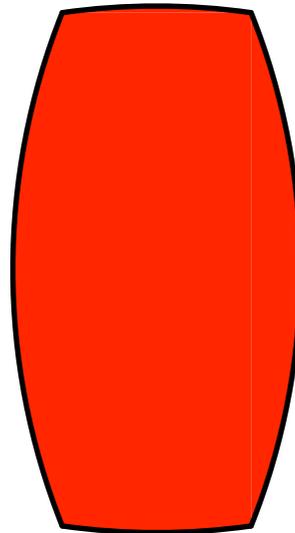


Gleichseitige Dreiecke

Bogen-Viereck

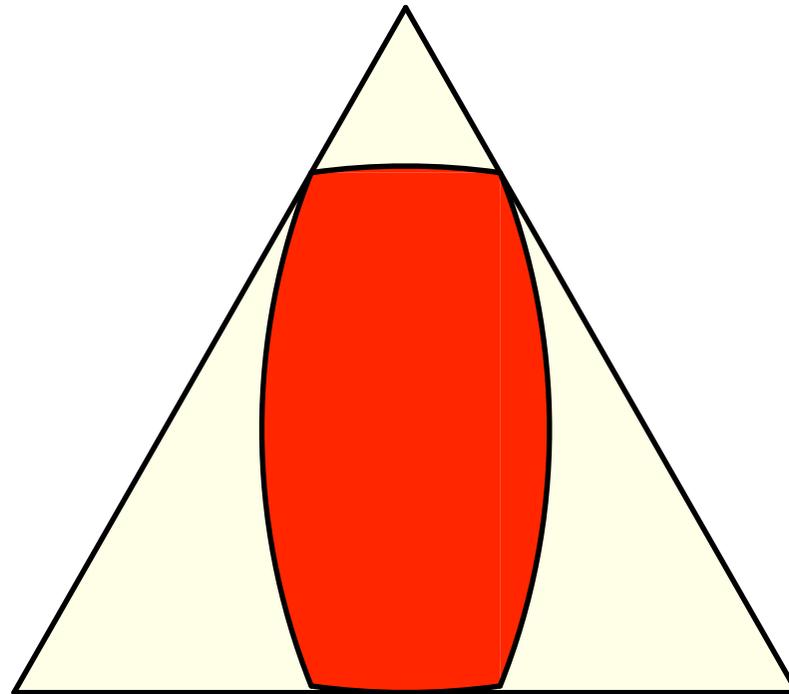


Bogen-Viereck



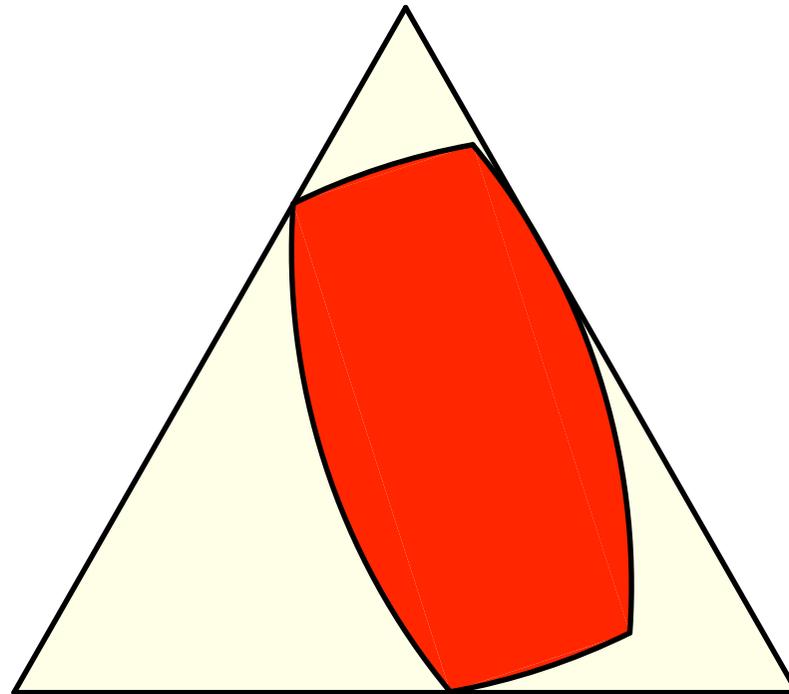
Bogen-Viereck

im Dreieck



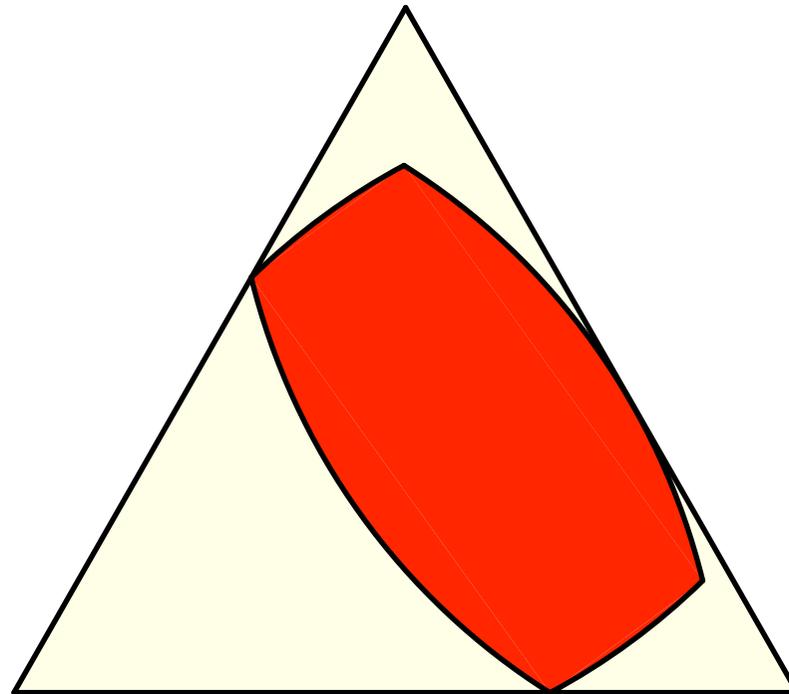
Bogen-Viereck

im Dreieck



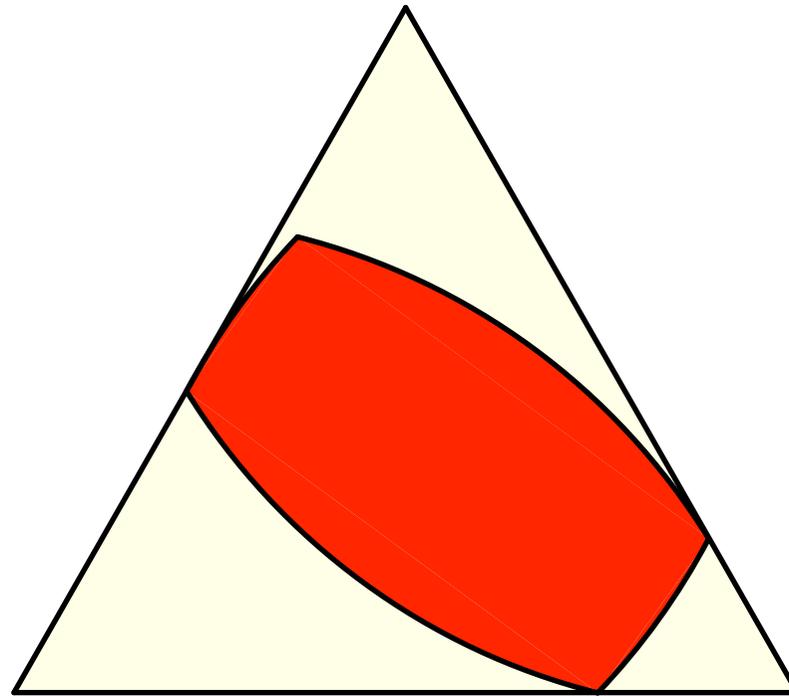
Bogen-Viereck

im Dreieck



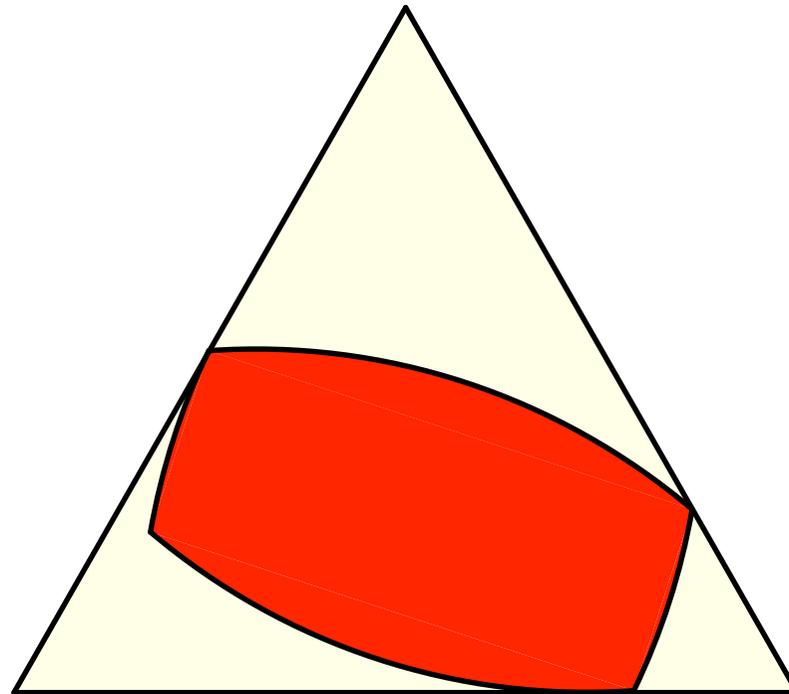
Bogen-Viereck

im Dreieck



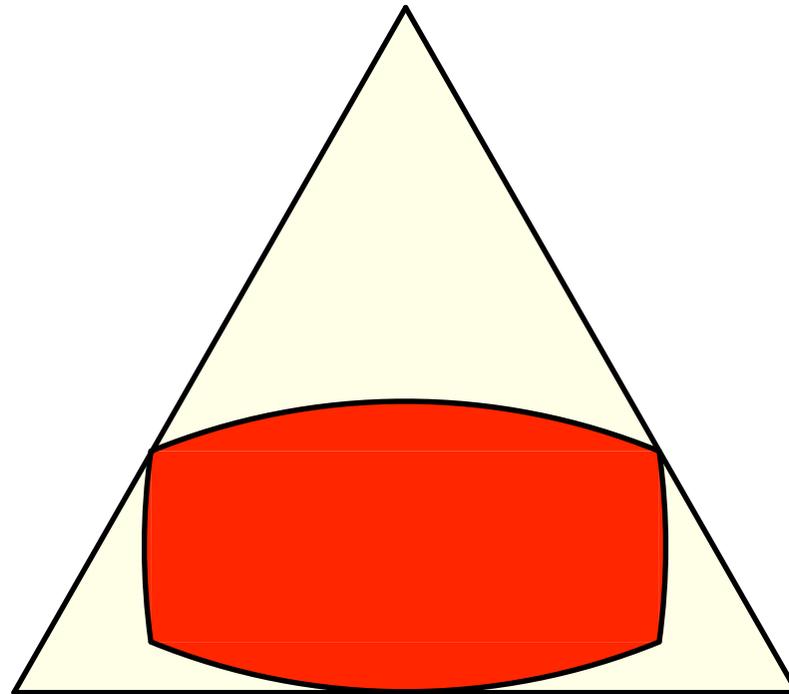
Bogen-Viereck

im Dreieck



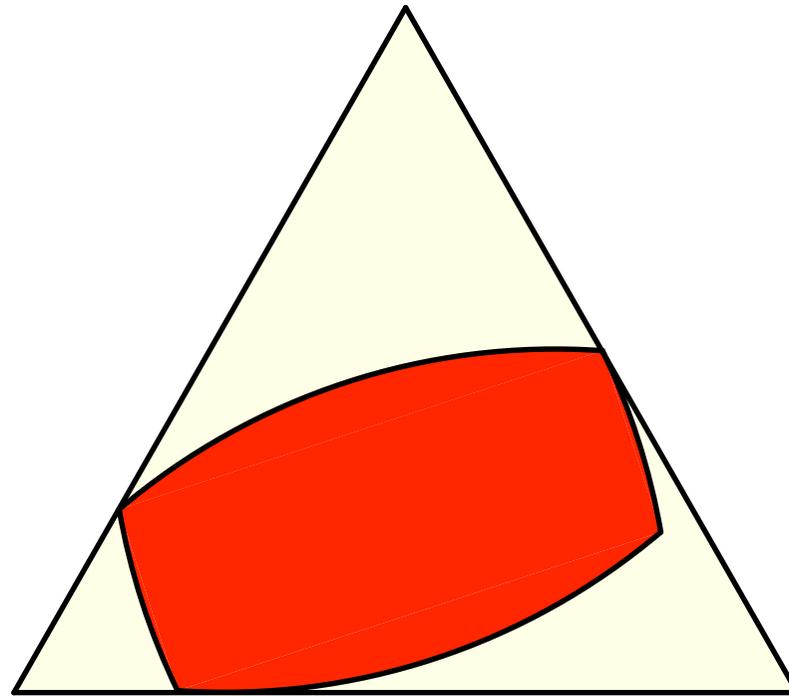
Bogen-Viereck

im Dreieck



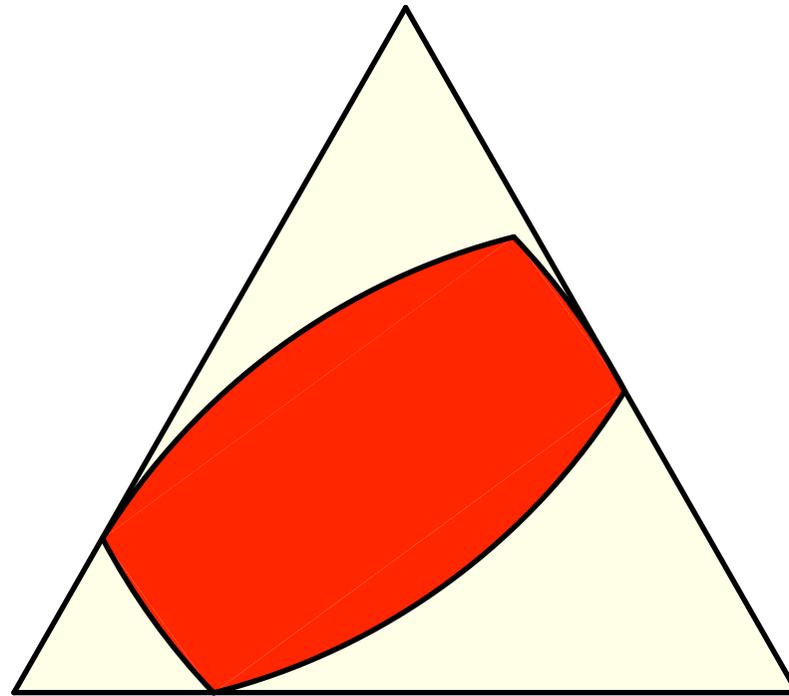
Bogen-Viereck

im Dreieck



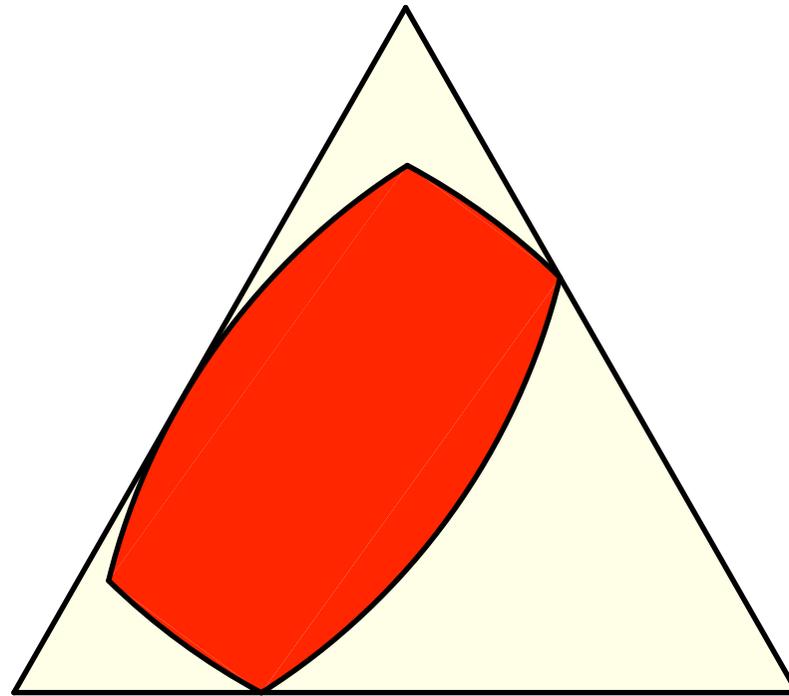
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im Dreieck



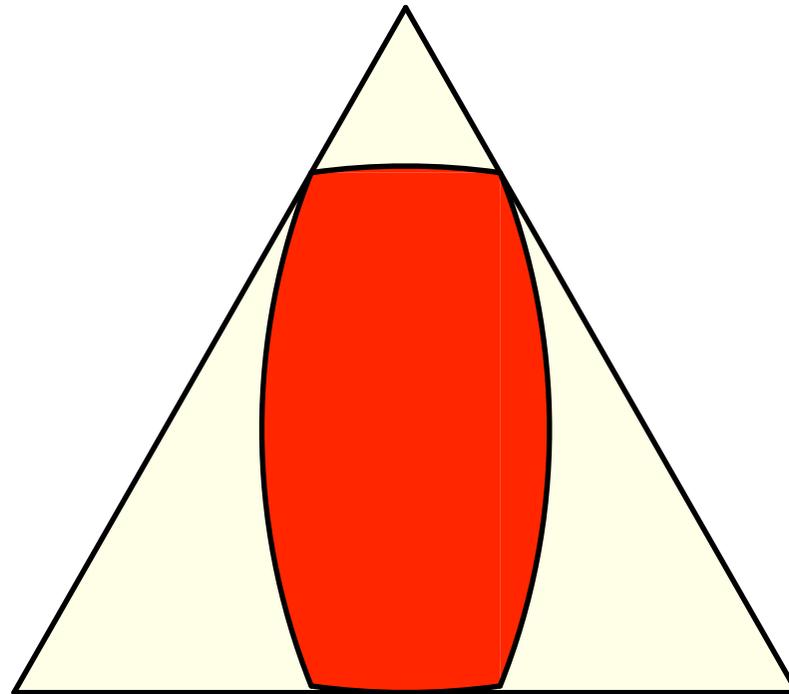
Bogen-Viereck

im Dreieck



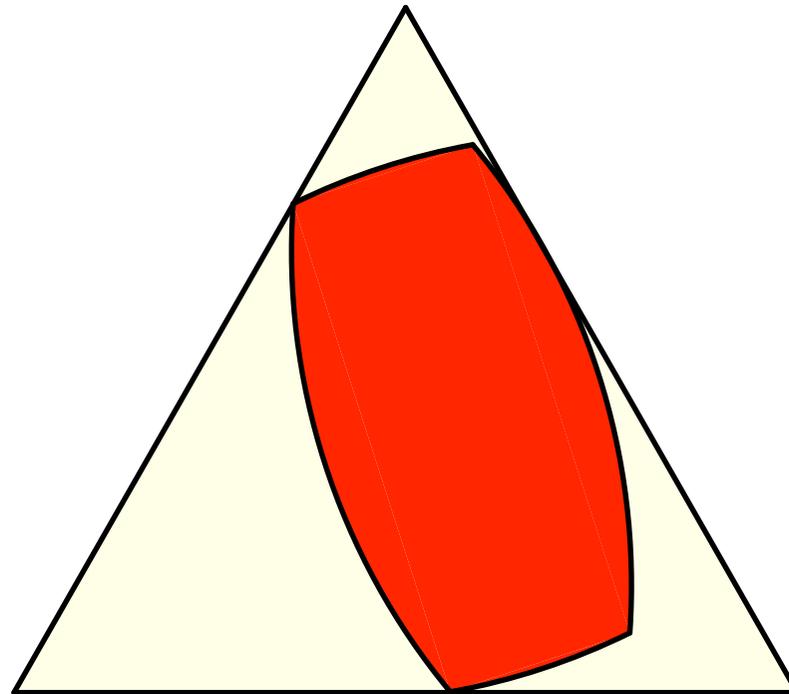
Bogen-Viereck

im Dreieck



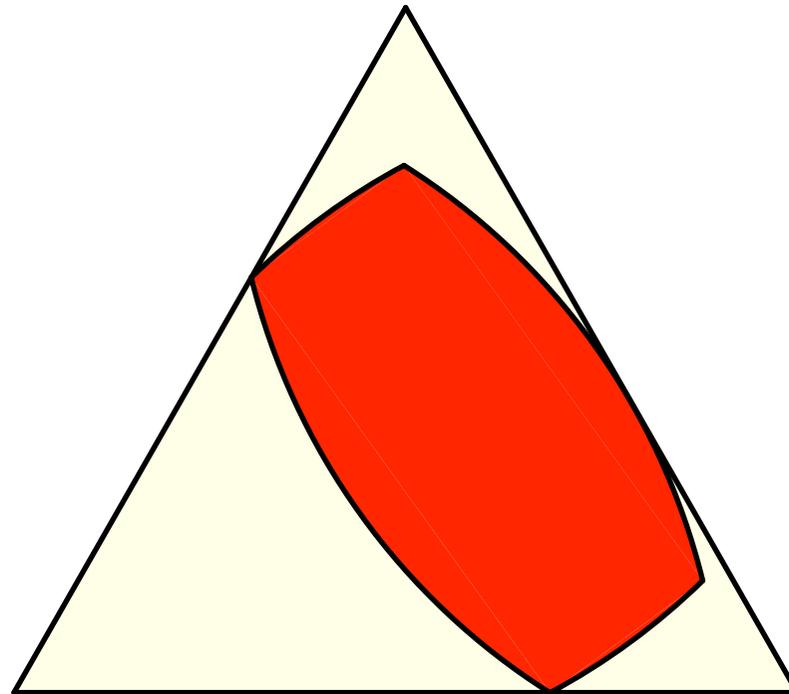
Bogen-Viereck

im Dreieck



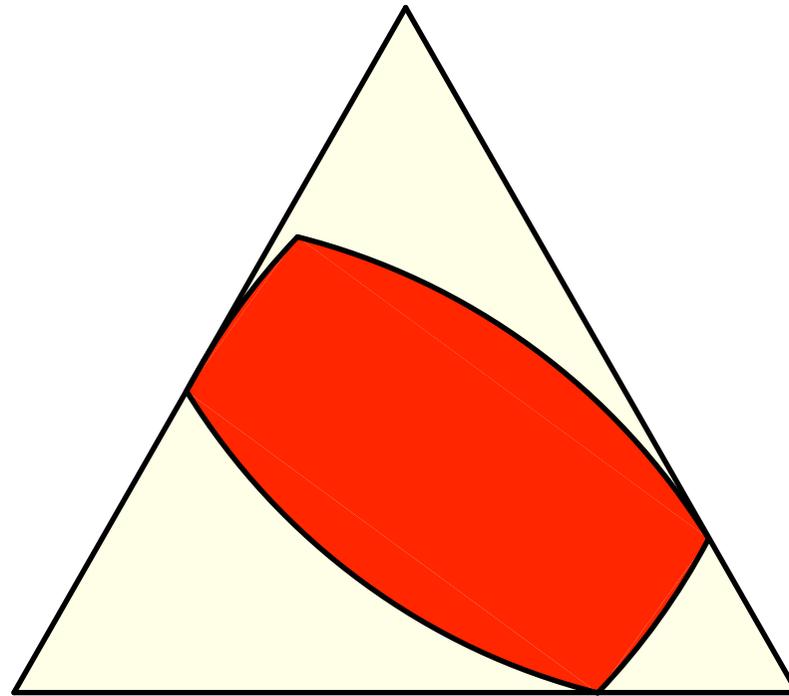
Bogen-Viereck

im Dreieck



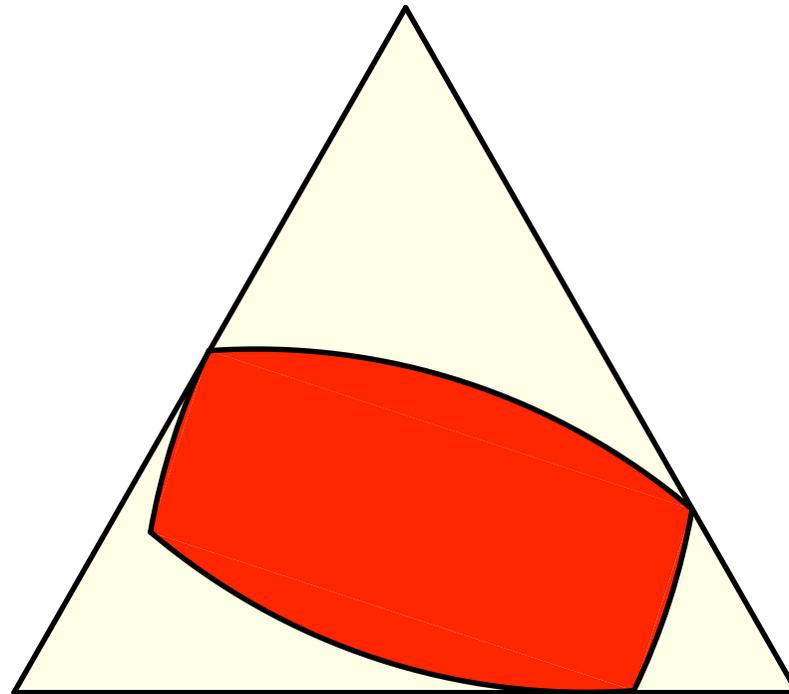
Bogen-Viereck

im Dreieck



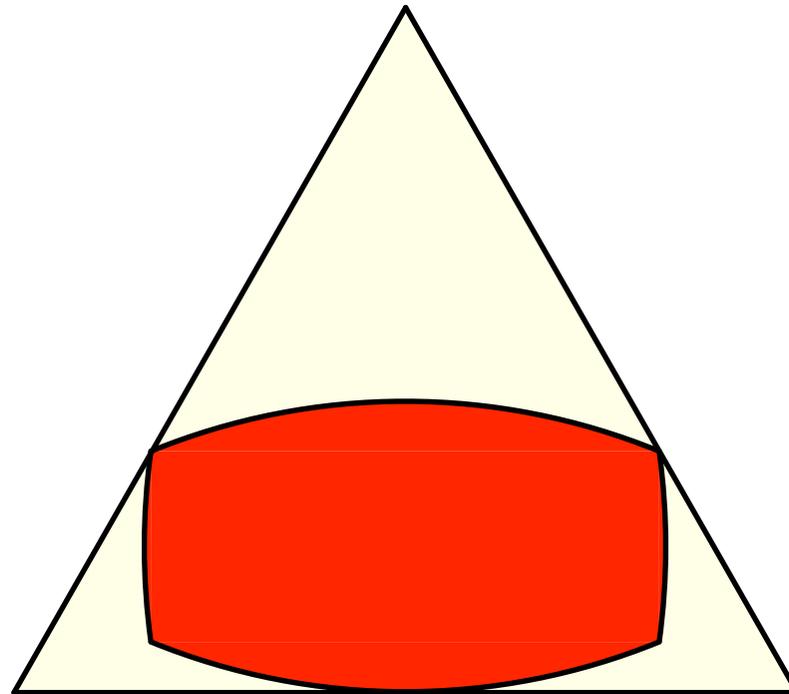
Bogen-Viereck

im Dreieck



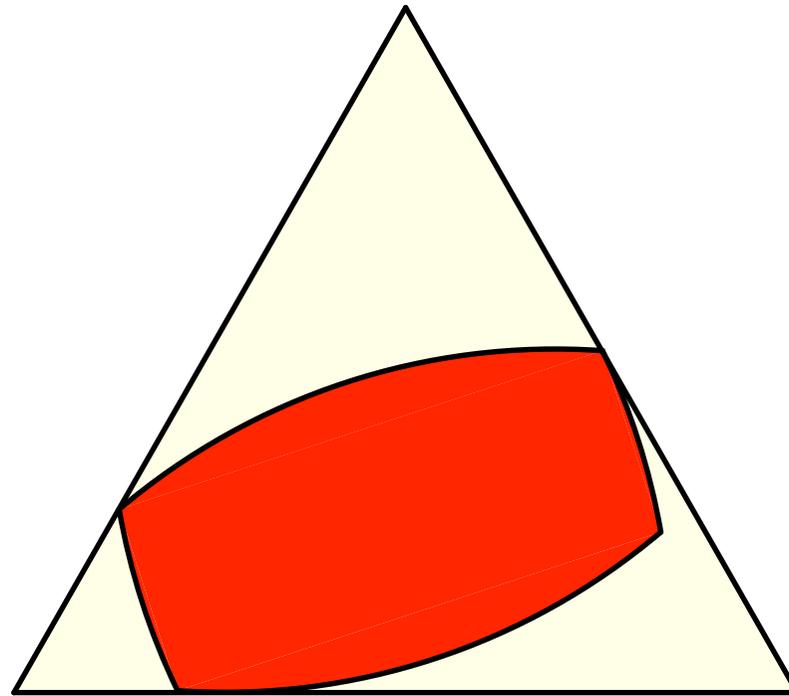
Bogen-Viereck

im Dreieck



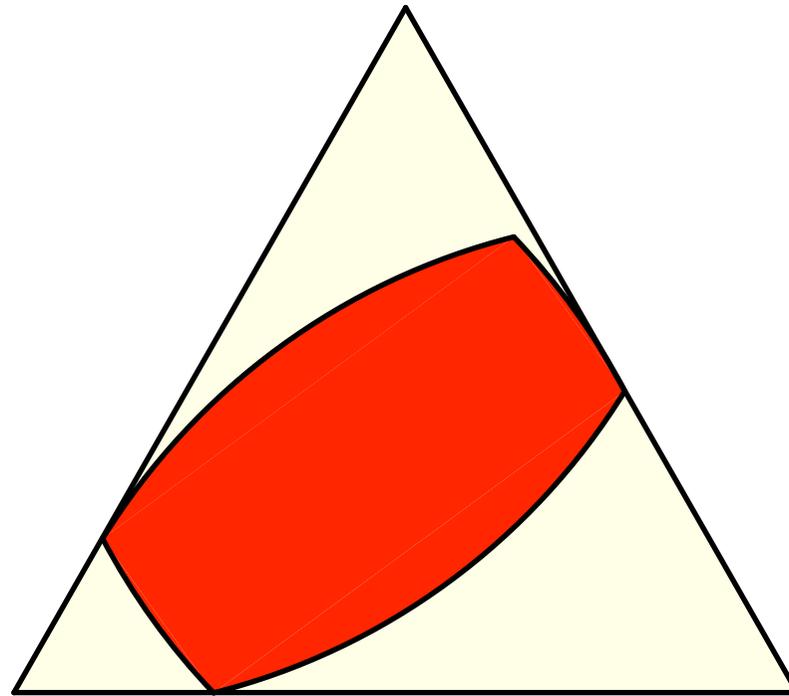
Bogen-Viereck

im Dreieck



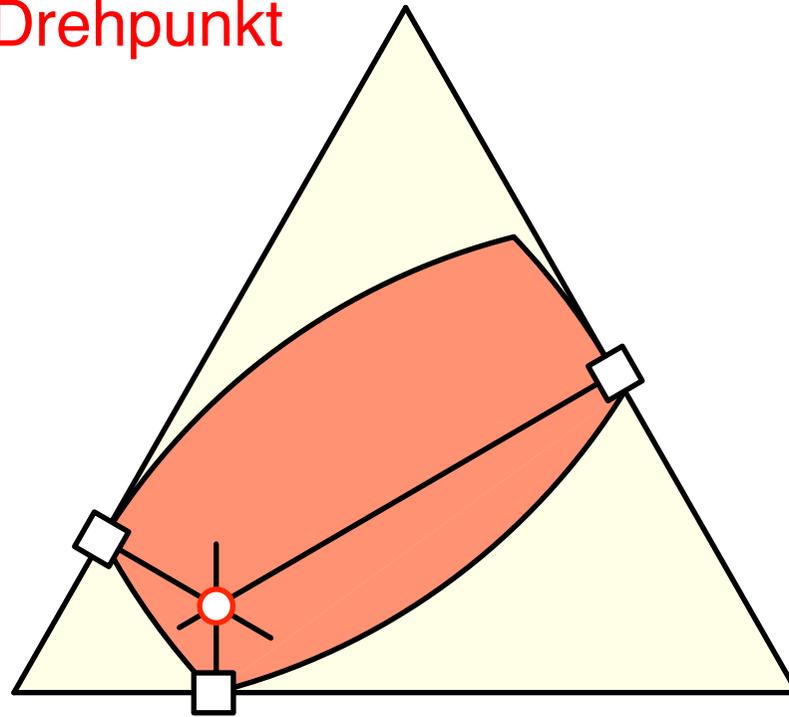
Bogen-Viereck

im Dreieck



Bogen-Viereck

Momentaner Drehpunkt

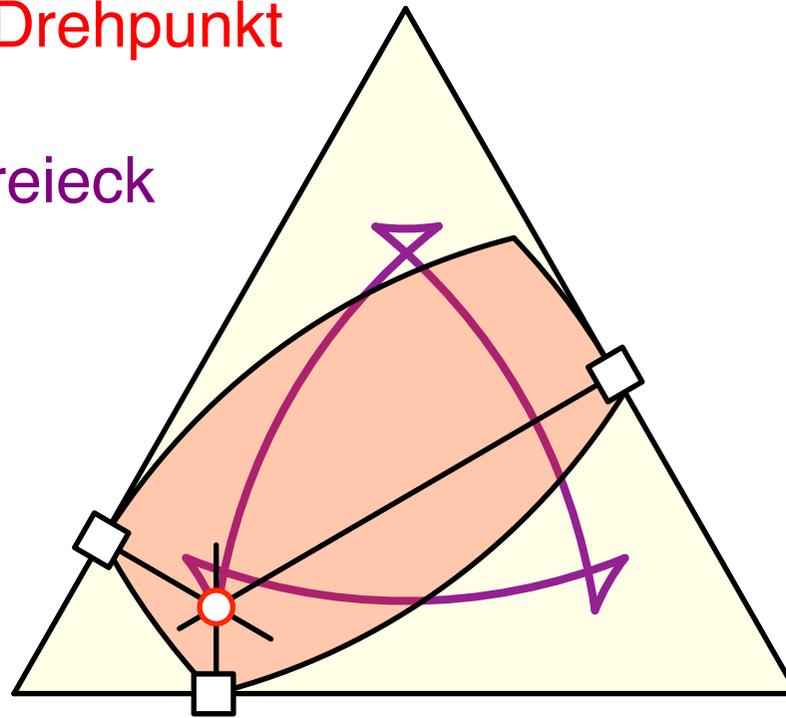


Bogen-Viereck

Momentaner Drehpunkt

Ortslinie

relativ zum Dreieck

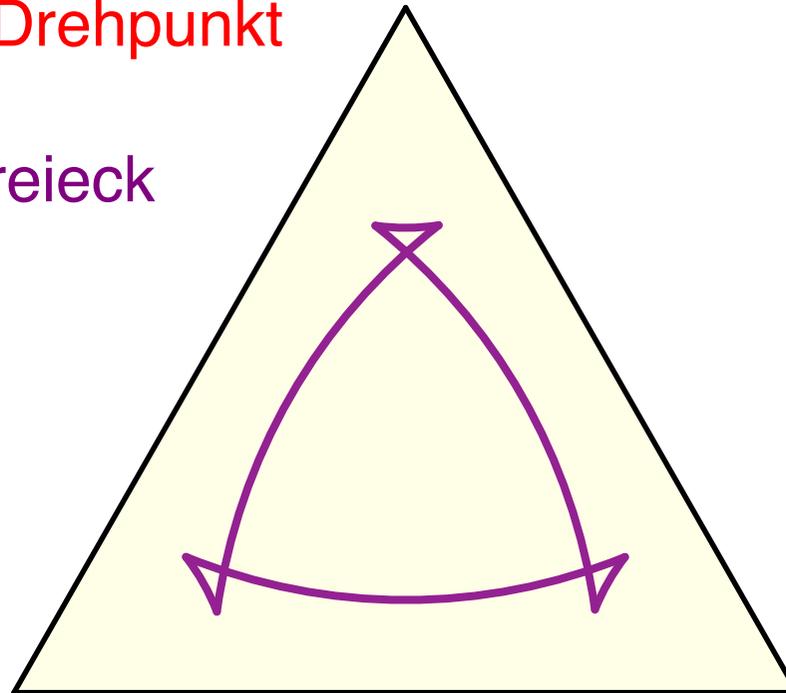


Bogen-Viereck

Momentaner Drehpunkt

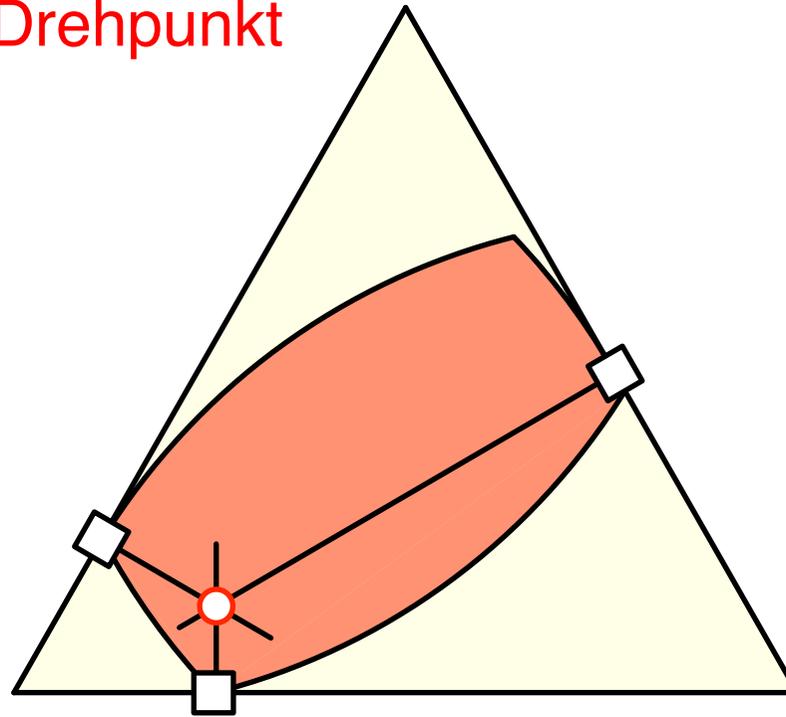
Ortslinie

relativ zum Dreieck



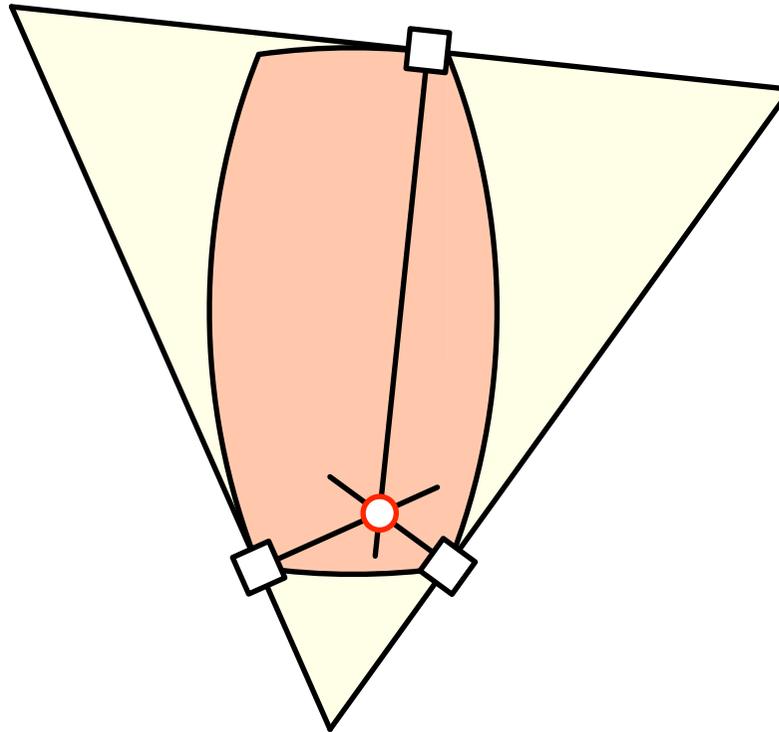
Bogen-Viereck

Momentaner Drehpunkt



Bogen-Viereck

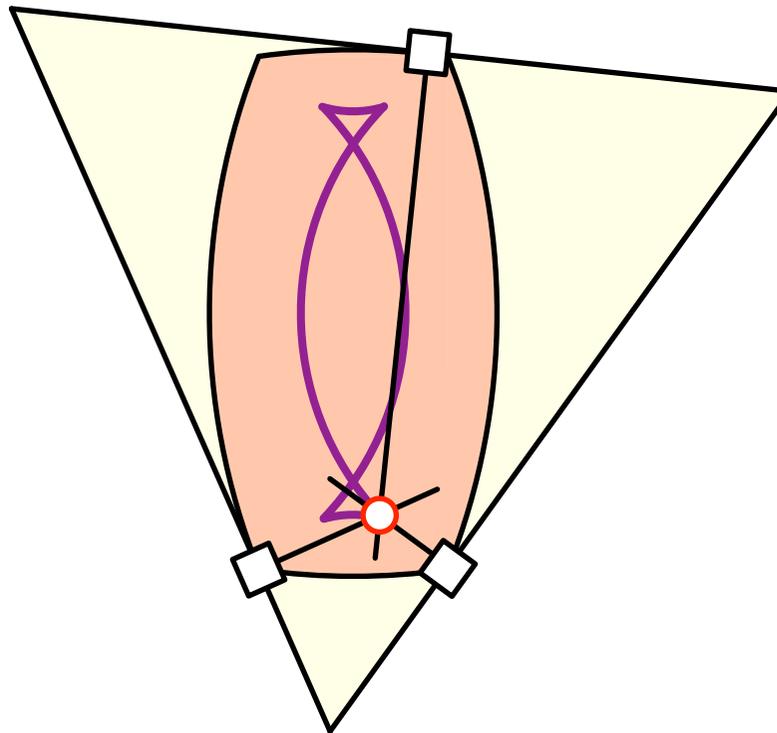
Momentaner Drehpunkt



Bogen-Viereck

Momentaner Drehpunkt

Ortslinie
relativ zum
Bogen-Viereck



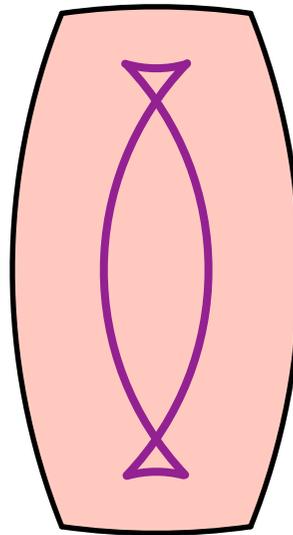
Bogen-Viereck

Momentaner Drehpunkt

Ortslinie

relativ zum

Bogen-Viereck



Danke

