

MAY 84

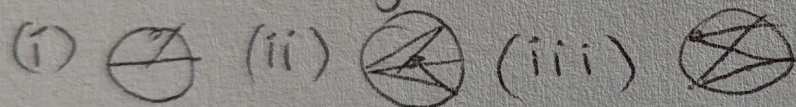
Outline (Wed Wk 5)

o. Post grades

1. HW Review (5)

2. Quiz = Ch. 1-2 (10-15)

3. Inscribed Angle Theorems



- Desmos -

4. Inscribed Polygons

3, 4, 6, 8, 16, 5, 17

Wednesday

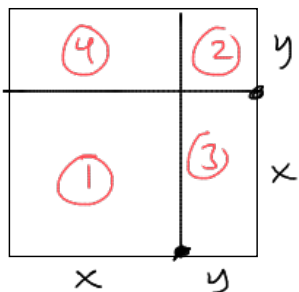
- ▼ 1. golden ratio
 - a. connection to pentagon / isosceles
- 2. geometric algebra
- 3.

Euclid's Elements

Book I: classical Eucl geom / Pyth. thm

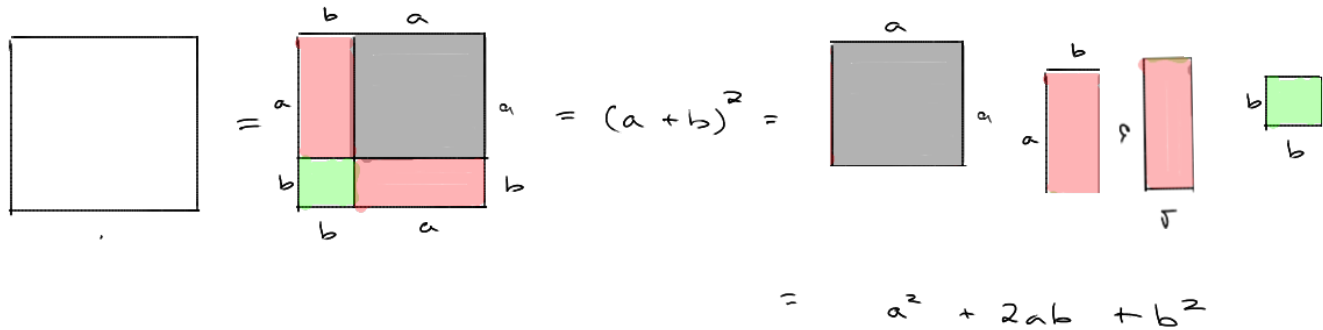
Book II: geometrical algebra

Book III: circles

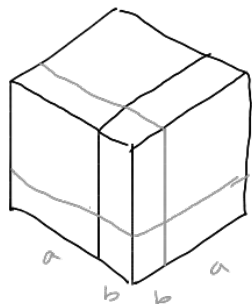


$$(x+y)^2 = \text{area} = x^2 + xy + yx + y^2 = x^2 + 2xy + y^2$$

Geometric Algebra



↓ 6th Century India ↓



$$= (a+b)^3$$

$$(a+b)^1 = a + b$$

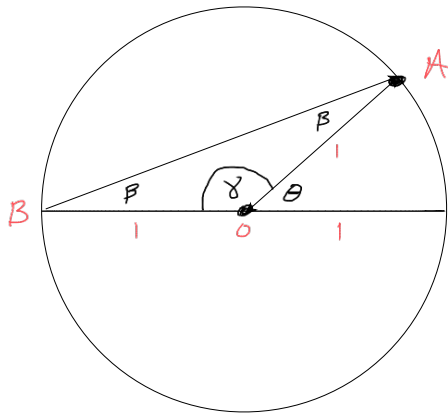
$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$(a+b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$$

Inscribed Angle Theorem

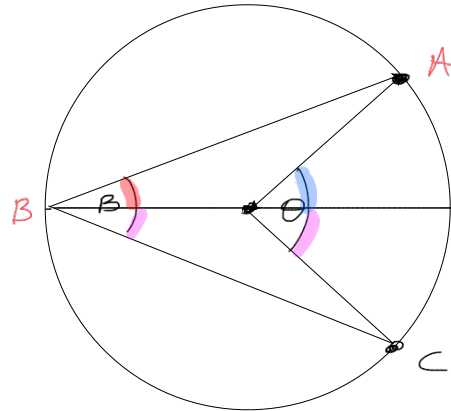
Easy Case



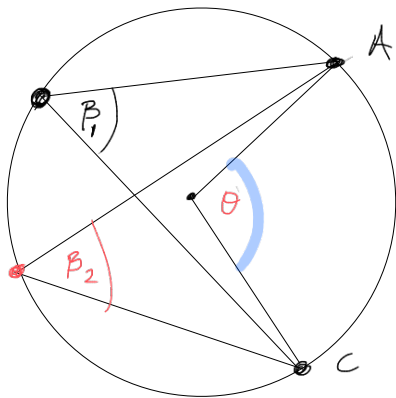
$$\theta + \gamma = 180$$

$$2\beta + \gamma = 180$$

$$\theta = 2\beta$$



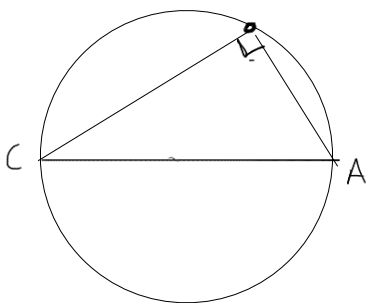
$$\theta = 2\beta$$



Relationship
blw

β_1, θ, β_2

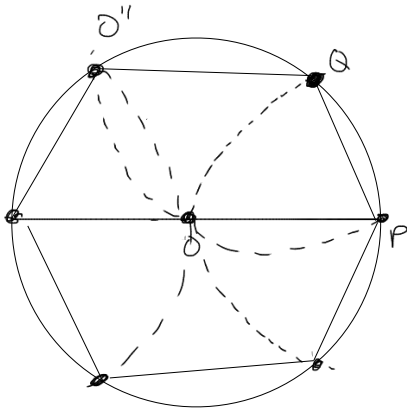
$$\Rightarrow \beta_1 = \beta_2$$



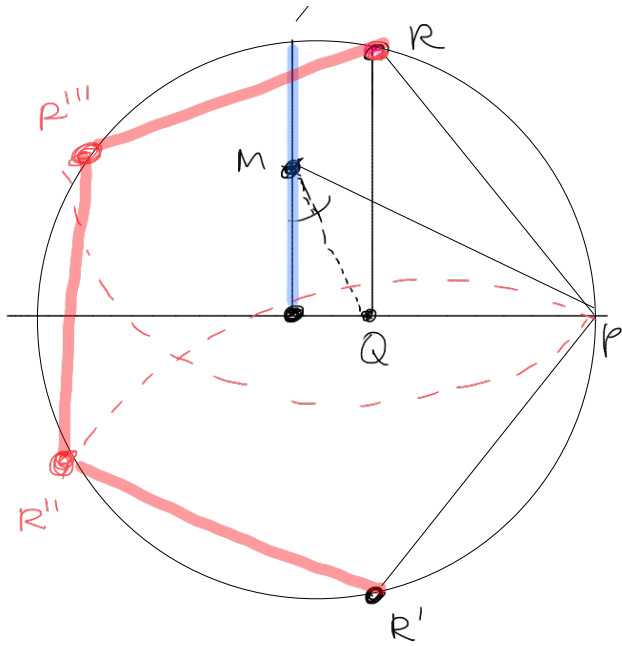
Thales' theorem

Polygons, Constructibility $\frac{1}{3}$ Inscription

Inscribe Hexagon in
a circle



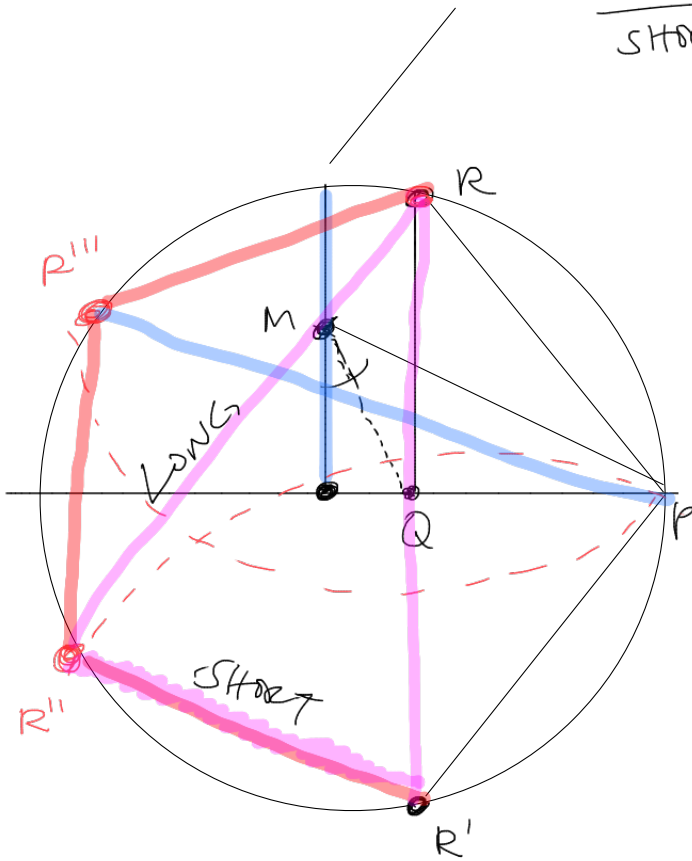
1. given circle, take a diameter $\frac{1}{2}$ mark center.
2. Raise arc w/ radius centered @ P
- intersects circle two
3. Move to one of these and repeat @, say Q
- 4.



Construct Pentagon

1. Raise \perp up from center
2. Take midpoint, M
3. Connect M to P
4. Bisect Angle, continue get Q
5. Raise \perp from Q, hit R on circle
6. PR = side of inscribed pentagon

$$\frac{\text{LONG}}{\text{SHORT}} = \phi$$



Construct Pentagon

1. Raise \perp up from center
2. Take midpoint, M
3. Connect M to P
4. Bisect Angle, continue get
5. Raise \perp from Q, hit
6. PR = side of inscribed