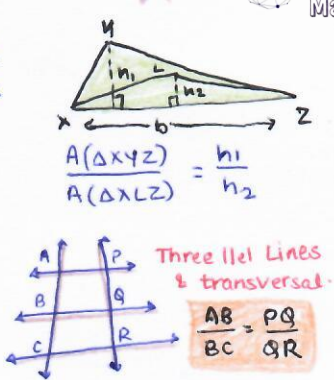
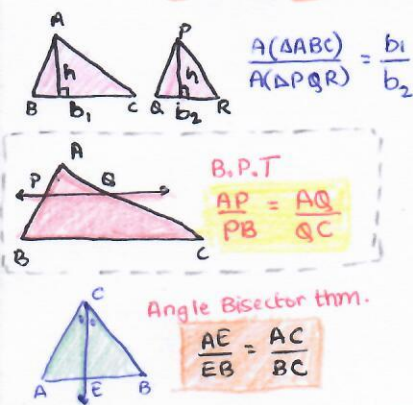


SIMILARITY

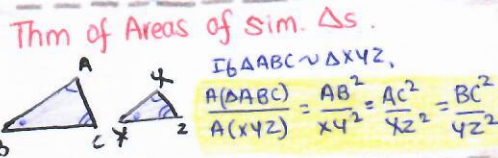
SID Study Material

PYTHAGORAS THEOREM



Tests of Similarity.

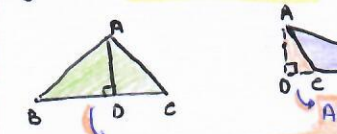
- ★ AAA test
 - ★ AA test
 - ★ SAS test
 - ★ SSS test
- sides are in proportion & angles $\cong$.



$$AB^2 + BC^2 = AC^2$$

$$YZ = \frac{1}{2} XZ \quad XY = \frac{\sqrt{3}}{2} XZ$$

$$AB = BC = \frac{1}{2} AC$$



similarity in right angled Δ .
 $\Delta ABC \sim \Delta BDC \sim \Delta ADB$

Thm of geometric mean
 $BS^2 = PS \times SR$

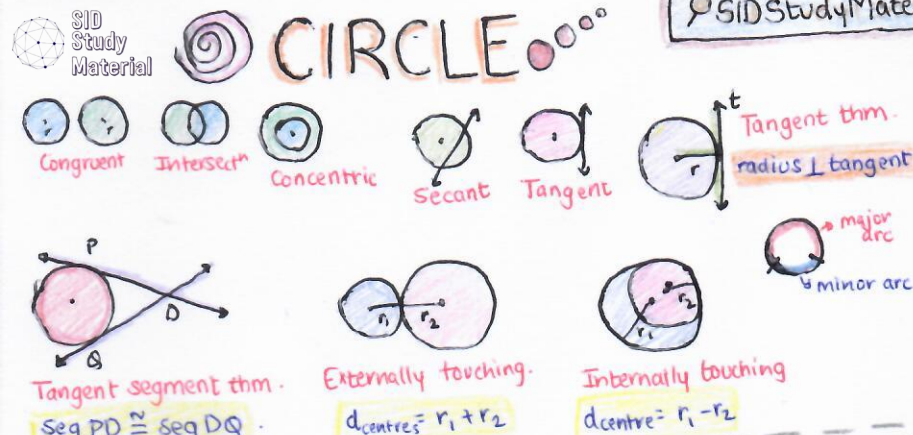
Appollonius thm.
 $AB^2 + AC^2 = 2AM^2 + 2BM^2$

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 FORMULA SHEET

CIRCLE

SID Study Material

COORDINATE GEOM.



Tangent segment thm.
 Seg PD $\cong$ Seg DQ

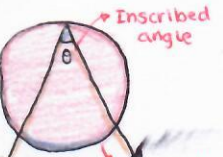
Externally touching.
 $d_{\text{centres}} = r_1 + r_2$

Internally touching.
 $d_{\text{centre}} = r_1 - r_2$

$m(\text{complete circle}) = 360^\circ$
 measure of arc = $m(\text{central angle})$

Two arcs are congruent if their measures and radii are equal.
 Chords corresponding to congruent arcs of circle are congruent. (& vice versa)

Inscribed angle
 $= \frac{1}{2} \times \text{arc intercepted by it.}$



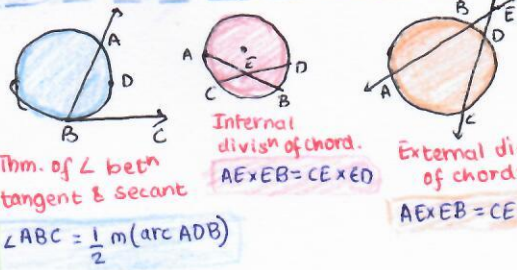
opposite angles of cyclic quadrilateral are **SUPPLEMENTARY**

$$\angle AEC = \frac{1}{2} [m(\text{arc AC}) + m(\text{arc DB})]$$

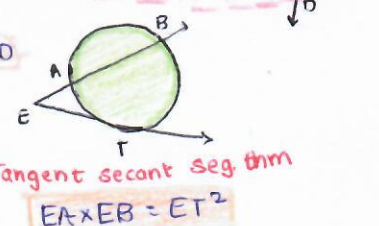
$$\angle CEB = \frac{1}{2} [m(\text{arc AD}) + m(\text{arc CB})]$$

$$\angle BED = \frac{1}{2} [m(\text{arc BD}) - m(\text{arc AC})]$$

Angles inscribed in same arc are congruent
 Angles inscribed in semicircle are right.



Thm. of $\angle$ betn tangent & secant
 $\angle ABC = \frac{1}{2} m(\text{arc ADB})$



NOW YOU'RE ONE STEP CLOSER
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$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Distance formula

$$d = \sqrt{x^2 + y^2}$$

distance from origin

$$(x, y) = \left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n} \right)$$

Section formula

$$(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Midpoint formula

$$(x, y) = \left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3} \right)$$

Centroid Formula

Slope (X axis) = 0
 Slope (Y axis) = ∞
 Slopes of parallel lines are same.

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

Slope = $\tan \theta$

TRIGONOMETRY

$$\sin \theta = \frac{\text{opp.}}{\text{hyp.}} \quad \csc \theta = \frac{\text{hyp.}}{\text{opp.}} \quad \sin \theta \times \csc \theta = 1$$

$$\cos \theta = \frac{\text{adj.}}{\text{opp.}} \quad \sec \theta = \frac{\text{hyp.}}{\text{adj.}} \quad \cos \theta \times \sec \theta = 1$$

$$\tan \theta = \frac{\text{opp.}}{\text{adj.}} \quad \cot \theta = \frac{\text{adj.}}{\text{opp.}} \quad \tan \theta \times \cot \theta = 1$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$1 + \cot^2 \theta = \csc^2 \theta$$

$$1 + \tan^2 \theta = \sec^2 \theta$$

angle of elevation
 angle of depression

$$l = \sqrt{h^2 + (r_1 - r_2)^2}$$

$$CSA = \pi l (r_1 + r_2)$$

$$TSA = CSA + \pi (r_1^2 + r_2^2)$$

$$V = \frac{1}{3} \pi h (r_1^2 + r_2^2 + r_1 r_2)$$

$$A = \frac{\theta}{360} \times \pi r^2$$

$$\text{Area (sector)} = \frac{l \times r}{2}$$

$$A = \frac{\theta}{360} \left[\frac{\pi \theta}{2} - \frac{\sin \theta}{2} \right]$$

segment

$$l = \frac{\theta}{360} \times 2\pi r$$

MENSURATION

LSA = $2h(l+b)$
 TSA = $2(lb+bh+lh)$
 $V = lbh$

LSA = $4l^2$
 TSA = $6l^2$
 $V = l^3$

CSA = $2\pi rh$
 TSA = $2\pi r(r+h)$
 $V = \pi r^2 h$

$l = \sqrt{h^2 + r^2}$
 CSA = $\pi r l$
 TSA = $\pi r(r+l)$
 $V = \frac{1}{3} \pi r^2 h$

TSA = $4\pi r^2$
 $V = \frac{4}{3} \pi r^3$
 CSA = $2\pi r^2$
 TSA = $3\pi r^2$
 $V = \frac{2}{3} \pi r^3$