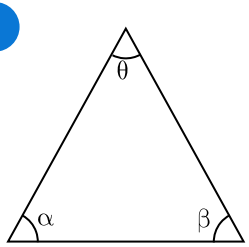
FORMULARIO - TRIÁNGULOS

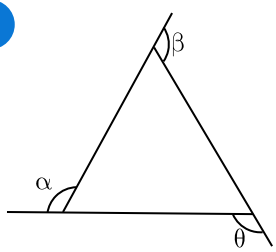
TEMA 04

1



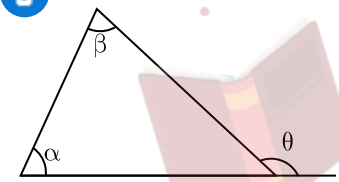
$\alpha + \beta + \theta = 180°$

2



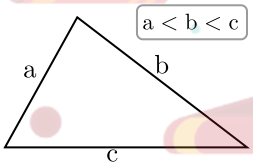
$\alpha + \beta + \theta = 360°$

3



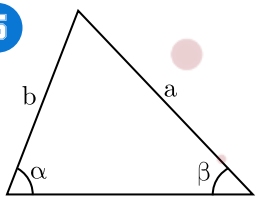
$\alpha + \beta = \theta$

4



$b - a < c < b + a$

5

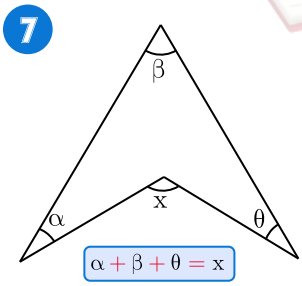


$a > b \Leftrightarrow \alpha > \beta$

6

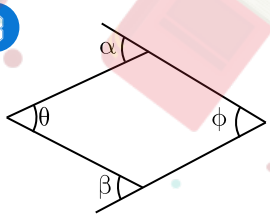
$\alpha + \beta = \theta + \phi$

7



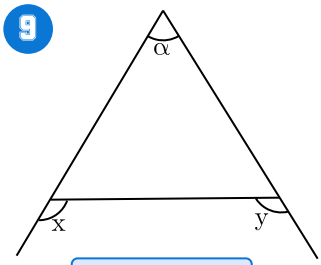
$\alpha + \beta + \theta = x$

8



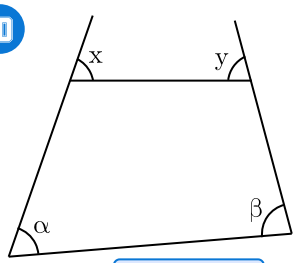
$\theta + \phi = \alpha + \beta$

9



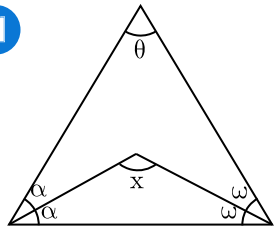
$x + y = 180° + \alpha$

10



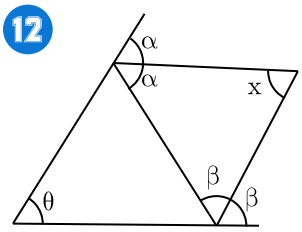
$x + y = \alpha + \beta$

11



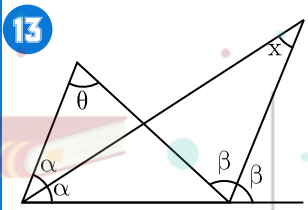
$x = 90° + \frac{\theta}{2}$

12



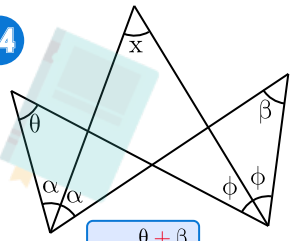
$x = 90° - \frac{\theta}{2}$

13



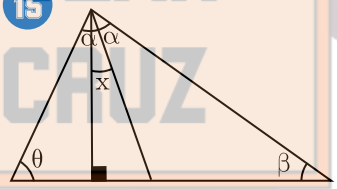
$x = \frac{\theta}{2}$

14



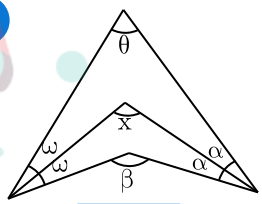
$x = \frac{\theta + \beta}{2}$

15



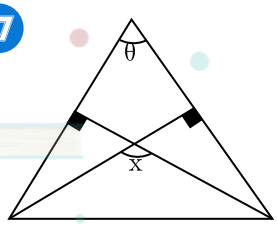
$x = \frac{\theta - \beta}{2}$

16



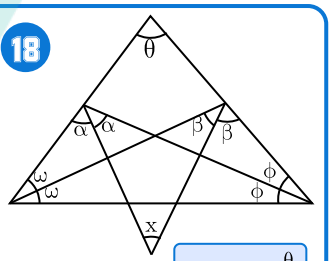
$x = \frac{\theta + \beta}{2}$

17



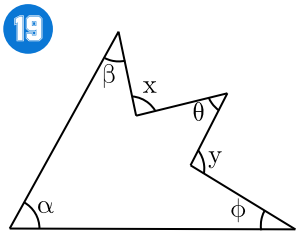
$x + \theta = 180°$

18



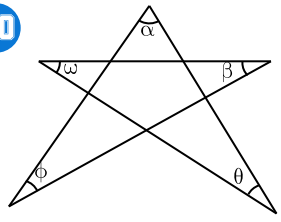
$x = 45° - \frac{\theta}{4}$

19



$\alpha + \beta + \theta + \phi = x + y$

20

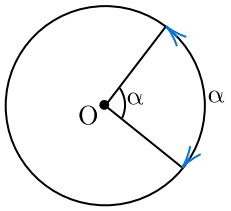


$\alpha + \beta + \theta + \phi + \omega = 180°$

FORMULARIO - CIRCUNFERENCIA I

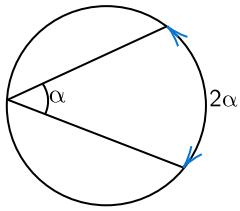
TEMA 07

1 ÁNGULO CENTRAL

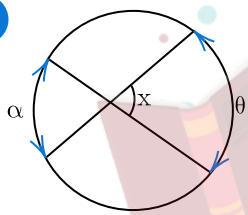


O : Centro de la circunferencia.

2 ÁNGULO INSCRITO

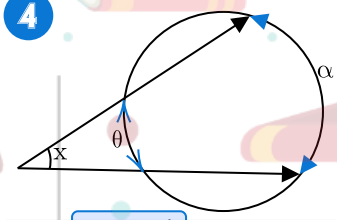


3 ÁNGULO INTERIOR



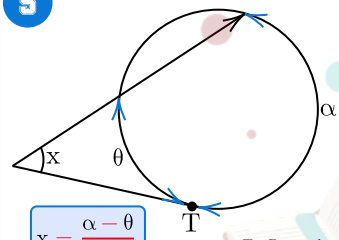
$$x = \frac{\alpha + \theta}{2}$$

4 ÁNGULO EXTERIOR



$$x = \frac{\alpha - \theta}{2}$$

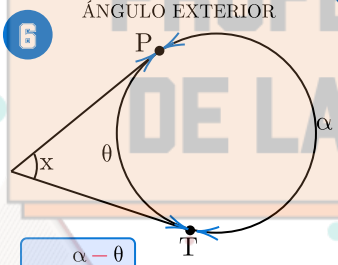
5 ÁNGULO EXTERIOR



$$x = \frac{\alpha - \theta}{2}$$

T : Punto de tangencia.

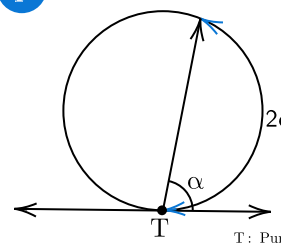
6 ÁNGULO EXTERIOR



$$x = \frac{\alpha - \theta}{2}$$

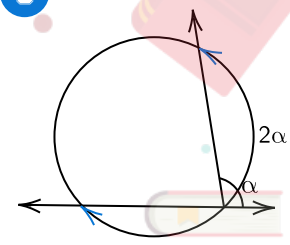
P y T : Puntos de tangencia.

7 ÁNGULO SEMI – INSCRITO

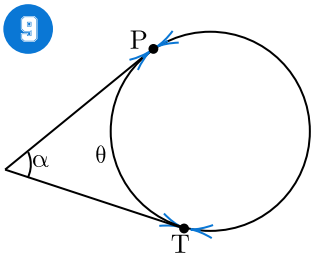


T : Punto de tangencia.

8 ÁNGULO EX – INSCRITO



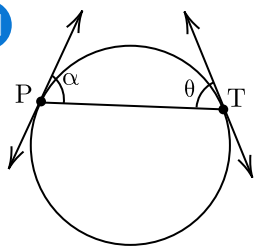
9



$\alpha + \theta = 180°$

P y T : Puntos de tangencia.

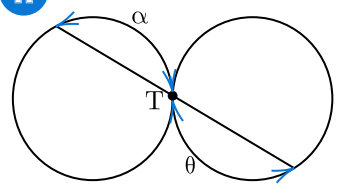
10



$\alpha = \theta$

P y T : Puntos de tangencia.

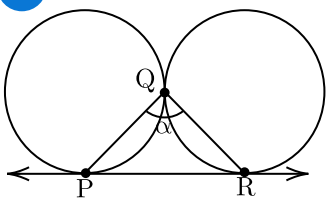
11



$\alpha = \theta$

T : Punto de tangencia.

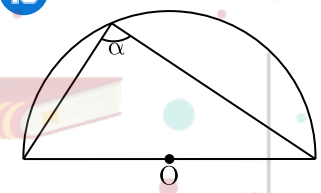
12



$\alpha = 90°$

P, Q y R : Puntos de tangencia.

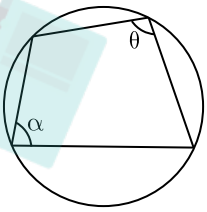
13



$\alpha = 90°$

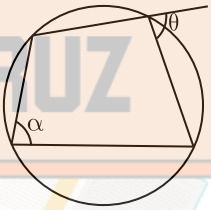
O : Centro de la semicircunferencia.

14 CUADRILÁTERO INSCRITO



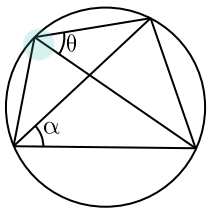
$\alpha + \theta = 180°$

15



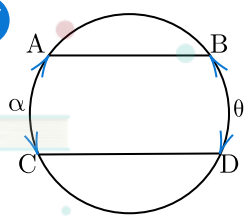
$\alpha = \theta$

16



$\alpha = \theta$

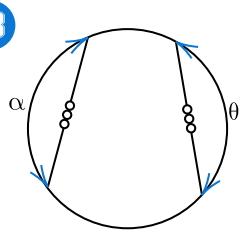
17



Si $\overline{AB} \,//\, \overline{CD}$

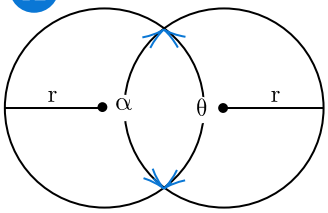
$\alpha = \theta$

18



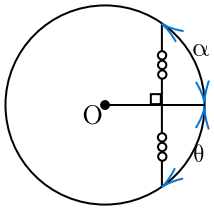
$\alpha = \theta$

19



$\alpha = \theta$

20



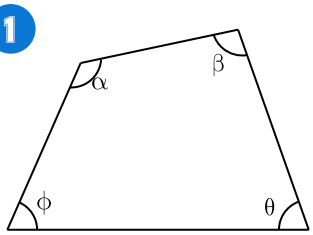
$\alpha = \theta$

O : Centro de la circunferencia.

FORMULARIO - CUADRILÁTEROS

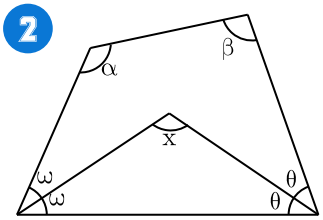
TEMA 06

1



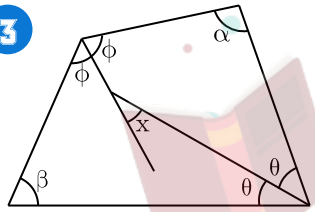
$\alpha + \beta + \theta + \phi = 360°$

2



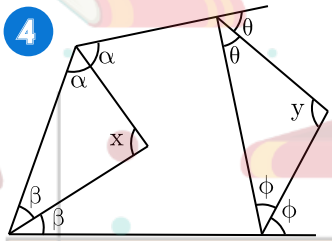
$x = \frac{\alpha + \beta}{2}$

3



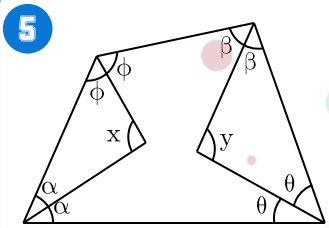
$x = \frac{\alpha - \beta}{2}$

4



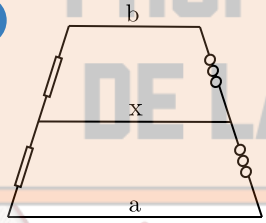
$x = y$

5



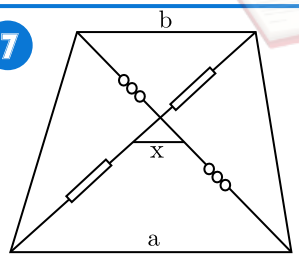
$x + y = 180°$

6 TRAPECIO – BASE MEDIA



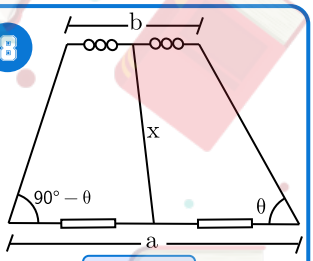
$x = \frac{a + b}{2}$

7 TRAPECIO



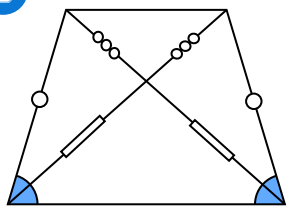
$x = \frac{a - b}{2}$

8 TRAPECIO

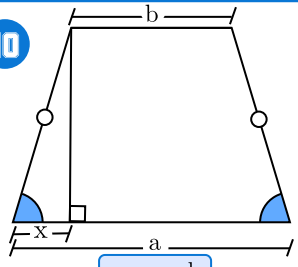


$x = \frac{a - b}{2}$

9 TRAPECIO ISÓSCELES

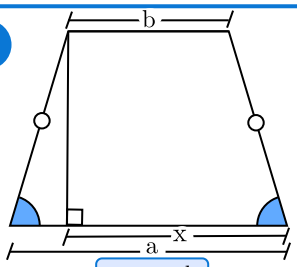


10



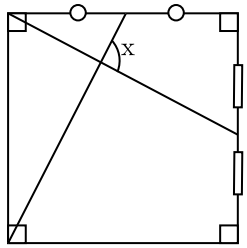
$x = \frac{a - b}{2}$

11



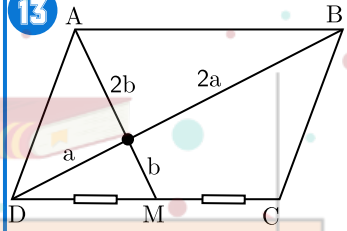
$x = \frac{a + b}{2}$

12 CUADRADO

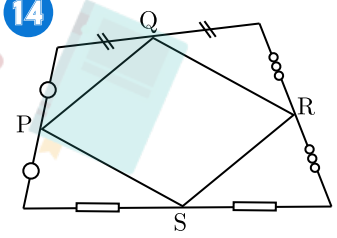


$x = 90°$

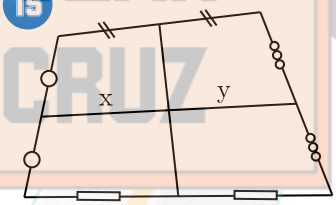
13 ABCD : PARALELOGRAMO



14 PQRS : PARALELOGRAMO

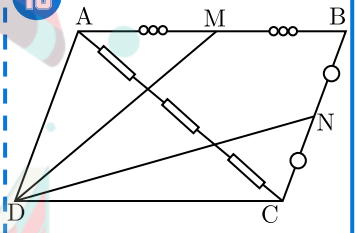


15

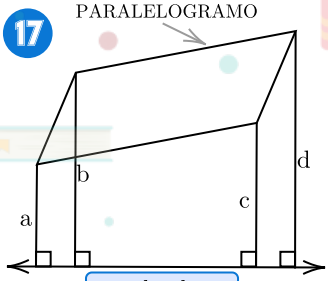


$x = y$

16 ABCD : PARALELOGRAMO

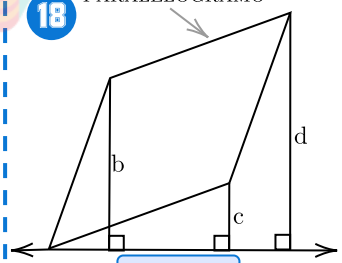


17 PARALELOGRAMO



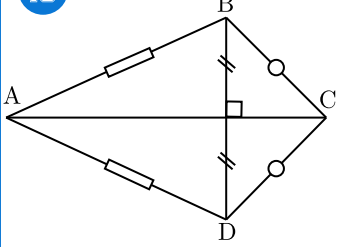
$a + d = b + c$

18 PARALELOGRAMO

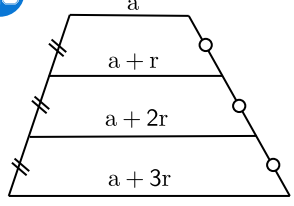


$d = b + c$

19 TRAPEZOIDE SIMÉTRICO



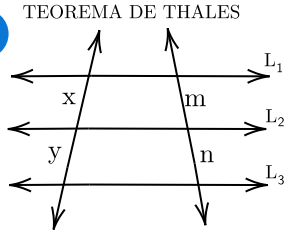
20 TRAPECIO



FORMULARIO - PROPORCIONALIDAD DE SEGMENTOS

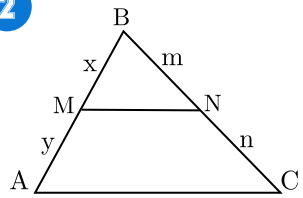
TEMA 08

1 TEOREMA DE THALES



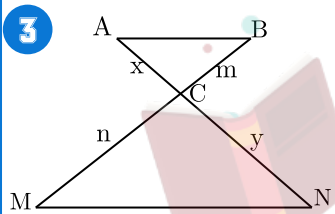
Si $\overleftrightarrow{L_1} // \overleftrightarrow{L_2} // \overleftrightarrow{L_3}$: $\frac{x}{y} = \frac{m}{n}$

2 COROLARIO DE THALES



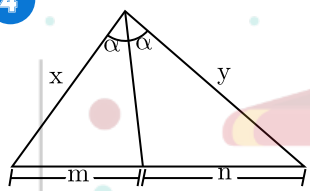
Si $\overline{MN} // \overline{AC}$: $\frac{x}{y} = \frac{m}{n}$

3 COROLARIO DE THALES



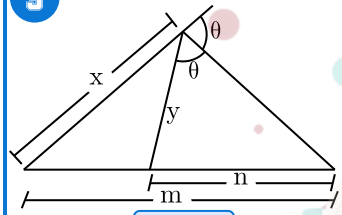
Si $\overline{AB} // \overline{MN}$: $\frac{x}{y} = \frac{m}{n}$

4 TEOREMA DE LA BISECTRIZ INTERIOR



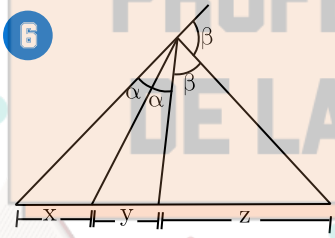
$\frac{x}{y} = \frac{m}{n}$

5 TEOREMA DE LA BISECTRIZ EXTERIOR



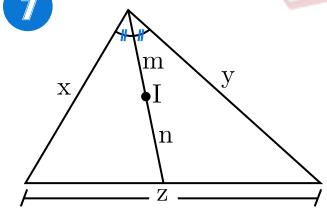
$\frac{x}{y} = \frac{m}{n}$

6



$\frac{x}{y} = \frac{x+y+z}{z}$

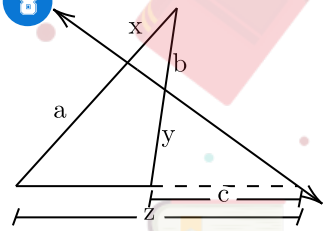
7 TEOREMA DEL INCENTRO



$\frac{m}{n} = \frac{x+y}{z}$

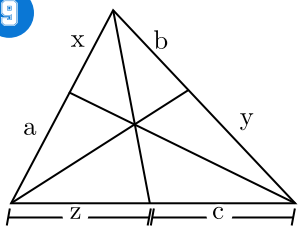
I : Incentro

8 TEOREMA DE MENELAO



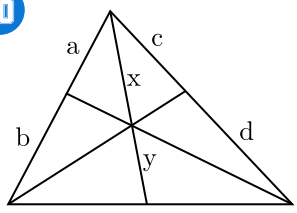
a . b . c = x . y . z

9 TEOREMA DE LA CEVA



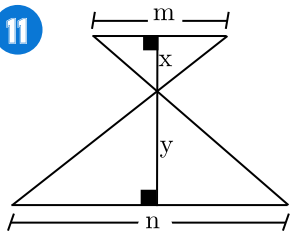
a . b . c = x . y . z

10 TEOREMA DE VAN AUBEL



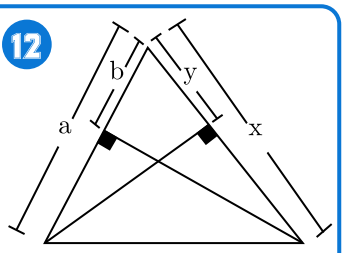
$\frac{x}{y} = \frac{a}{b} + \frac{c}{d}$

11



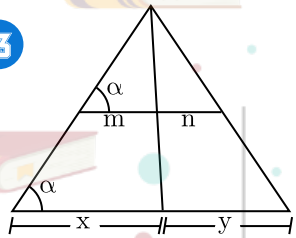
$\frac{m}{n} = \frac{x}{y}$

12



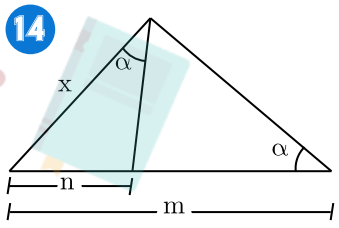
a . b = x . y

13



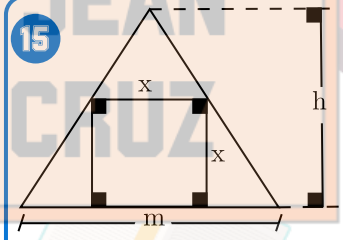
$\frac{m}{n} = \frac{x}{y}$

14



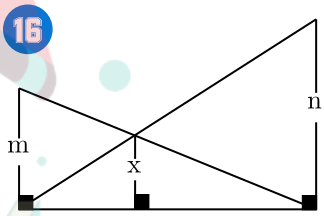
$x^2 = m \cdot n$

15



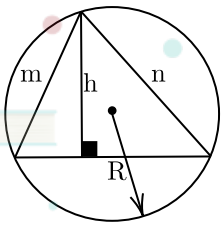
$x = \frac{mh}{m+h}$

16



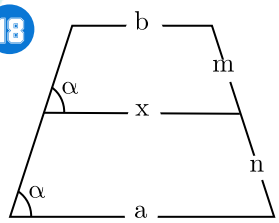
$x = \frac{mn}{m+n}$

17



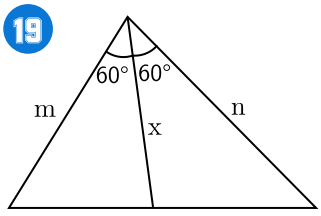
m . n = 2.R . h

18 TRAPECIO



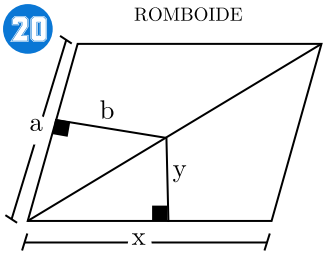
$x = \frac{am+bn}{m+n}$

19



$x = \frac{mn}{m+n}$

20 ROMBOIDE

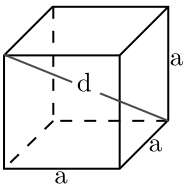


a . b = m . n

FORMULARIO - CUERPOS GEOMÉTRICOS

TEMA 12

1 HEXAEDRO REGULAR



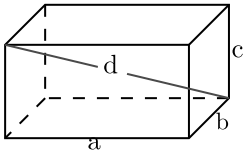
$A_T = 6a^2$

$V = a^3$

$d = a\sqrt{3}$

a : arista.
d : diagonal del hexaedro.

2 PARALELEPÍPEDO RECTANGULAR

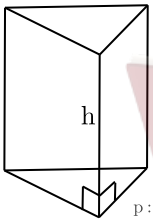


$A_T = 2(ab + ac + bc)$

$V = abc$

$d^2 = a^2 + b^2 + c^2$

3 PRISMA TRIANGULAR RECTO



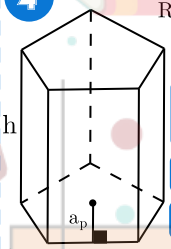
$A_L = hp$

$A_T = 2A_B + A_L$

$V = A_B . h$

p : perímetro de la base.
h : altura del prisma.

4 PRISMA PENTAGONAL RECTO



$A_L = hp$

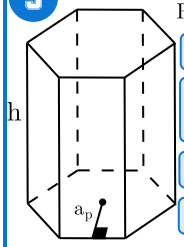
$A_B = \frac{p . a_p}{2}$

$A_T = 2A_B + A_L$

$V = A_B . h$

a_p : apotema.
p : perímetro de la base.

5 PRISMA HEXAGONAL RECTO



$A_L = hp$

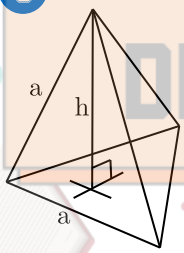
$A_B = \frac{p . a_p}{2}$

$A_T = 2A_B + A_L$

$V = A_B . h$

a_p : apotema.
p : perímetro de la base.

6 TETRAEDRO REGULAR



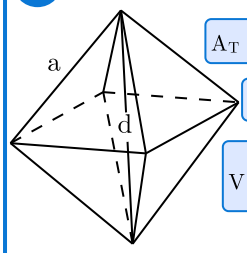
$h = \frac{a\sqrt{6}}{3}$

$A_T = a^2\sqrt{3}$

$V = \frac{a^3\sqrt{2}}{12}$

a : arista.

7 OCTAEDRO REGULAR

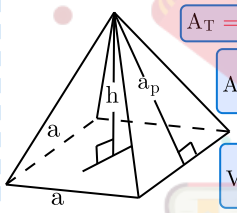


$A_T = 2a^2\sqrt{3}$

$d = a\sqrt{2}$

$V = \frac{a^3\sqrt{2}}{3}$

8 PIRÁMIDE CUADRANGULAR



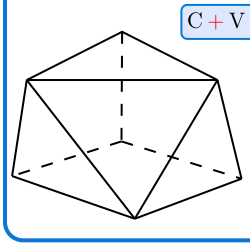
$A_T = A_B + A_L$

$A_L = \frac{p . a_p}{2}$

$V = \frac{A_B . h}{3}$

a_p : apotema del poliedro.
p : perímetro de la base.

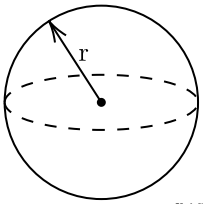
9 TEOREMA DE EULER PARA POLIEDROS CONVEXOS



$C + V = A + 2$

C : caras
V : vértices
A : aristas

10 ESFERA

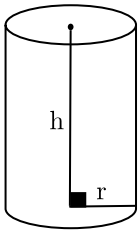


$A_S = 4\pi r^2$

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

r : radio de la esfera

11 CILINDRO RECTO



$A_L = 2\pi rh$

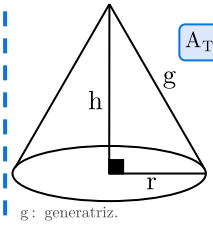
$A_B = \pi r^2$

$A_T = 2\pi r(h + r)$

$V = \pi r^2 h$

g : generatriz.
h : altura

12 CONO CIRCULAR RECTO



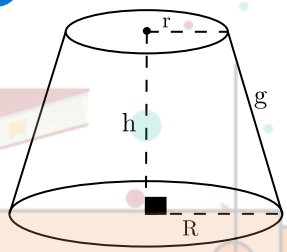
$A_T = \pi r(g + r)$

$A_L = \pi rg$

$V = \frac{1}{3}\pi r^2 h$

g : generatriz.
h : altura

13 TRONCO DE CONO CIRCULAR RECTO



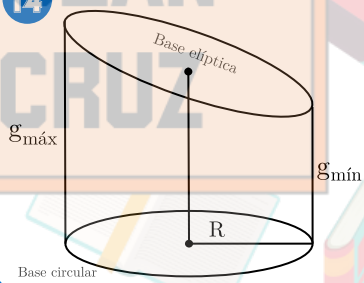
$A_L = \pi g(R + r)$

$A_T = \pi g(R + r) + \pi R^2 + \pi r^2$

$V = \frac{\pi h}{3}(R^2 + Rr + r^2)$

r : radio menor.
R : radio mayor.
h : altura.
g : generatriz.

14 TRONCO DE CILINDRO CIRCULAR RECTO



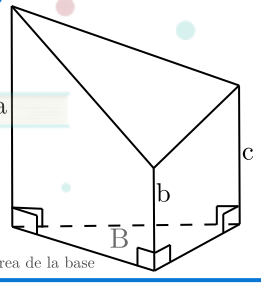
$A_L = \pi R(g_{mín} + g_{máx})$

$A_T = A_L + \sum$ áreas de las bases

$V = \pi R^2\left(\frac{g_{máx} + g_{mín}}{2}\right)$

$g_{máx}$: generatriz máxima.
$g_{mín}$: generatriz mínima.

15 TRONCO DE PRISMA TRIANGULAR RECTO



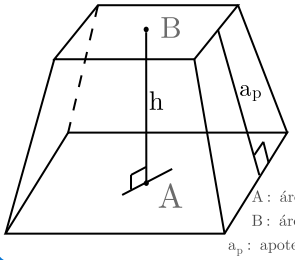
$A_L = \sum$ áreas de las caras laterales

$A_T = A_L + \sum$ áreas de las bases

$V = B\left(\frac{a + b + c}{3}\right)$

B : área de la base

16 TRONCO DE PIRÁMIDE REGULAR



$A_L = \left(\frac{p_A + p_B}{2}\right)a_p$

$A_T = A_L + A + B$

$V = \frac{h}{3}\left(A + B + \sqrt{AB}\right)$

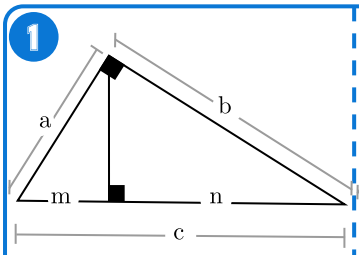
A : área de la base inferior.
B : área de la base superior.
a_p : apotema del tronco de pirámide.
p_A : perímetro de la base inferior.
p_B : perímetro de la base superior.

✓ A_L : área de la superficie lateral.
✓ A_B : área de la base.
✓ A_T : área de la superficie total.
✓ V : volumen del cuerpo geométrico.

RELACIONES MÉTRICAS EN EL TRIÁNGULO RECTÁNGULO Y EN LA CIRCUNFERENCIA

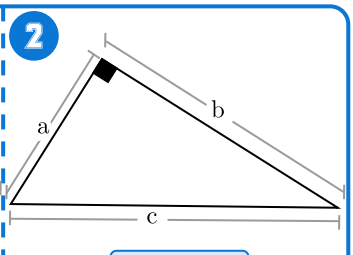
TEMA 09

1



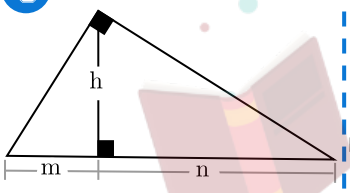
$a^2 = cm$ $\quad b^2 = cn$

2



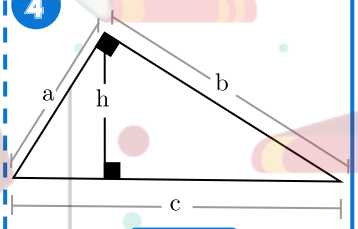
$a^2 + b^2 = c^2$

3



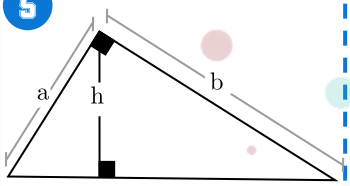
$h^2 = mn$

4



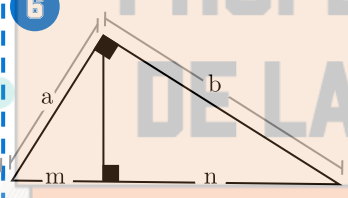
$ab = ch$

5



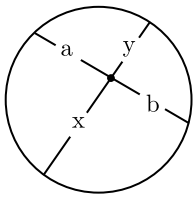
$\frac{1}{h^2} = \frac{1}{a^2} + \frac{1}{b^2}$

6



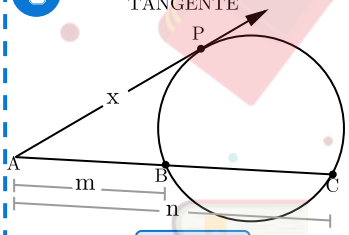
$\frac{a^2}{b^2} = \frac{m}{n}$

7 TEOREMA DE LAS CUERDAS



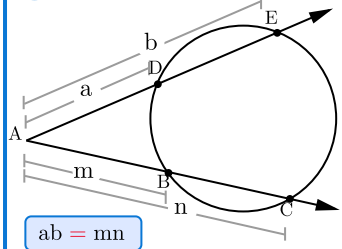
$ab = xy$

8 TEOREMA DE LA TANGENTE



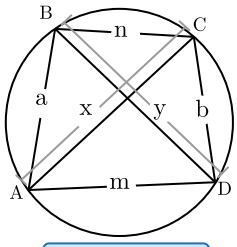
$x^2 = mn$

9 TEOREMA DE LAS SECANTES



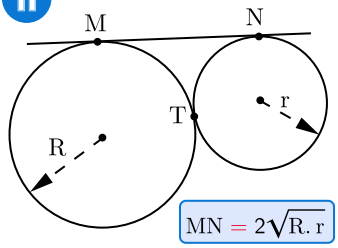
$ab = mn$

10 TEOREMA DE PTOLOMEO



$xy = ab + mn$

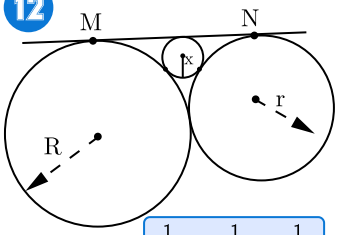
11



$MN = 2\sqrt{R.r}$

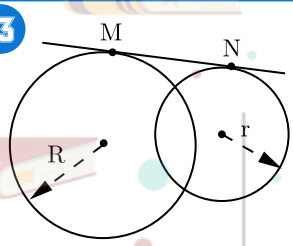
M, y N : Puntos de tangencia.

12



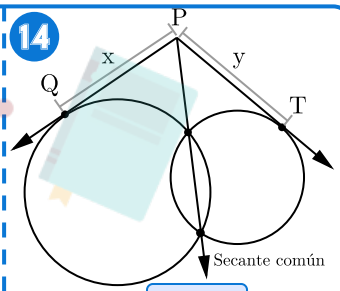
$\frac{1}{\sqrt{x}} = \frac{1}{\sqrt{R}} + \frac{1}{\sqrt{r}}$

13



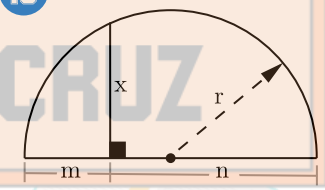
$MN = \sqrt{2R.r}$

14



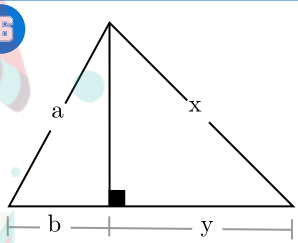
$x = y$

15



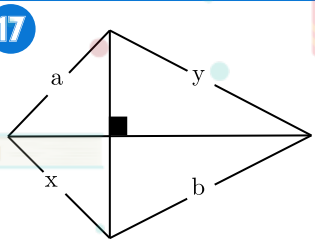
$x^2 = mn$

16



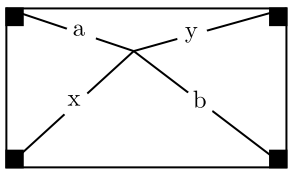
$a^2 - b^2 = x^2 - y^2$

17



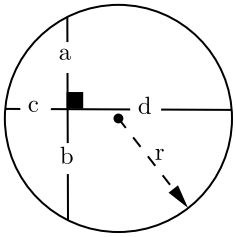
$a^2 + b^2 = x^2 + y^2$

18



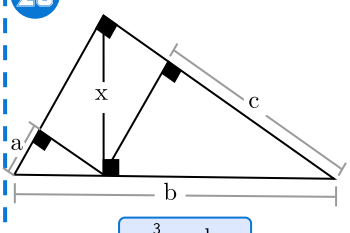
$a^2 + b^2 = x^2 + y^2$

19



$a^2 + b^2 + c^2 + d^2 = 4r^2$

20

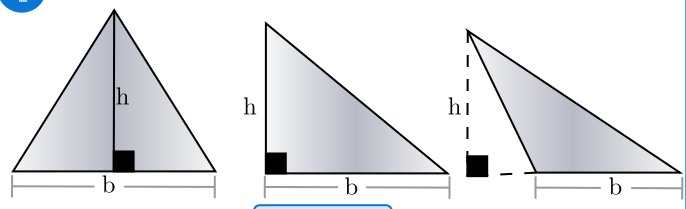


$x^3 = abc$

ÁREAS DE REGIONES PLANAS I

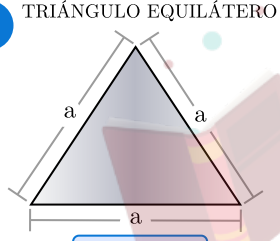
TEMA 10

1 ÁREA DE UNA REGIÓN TRIÁNGULAR – TEOREMA BÁSICO



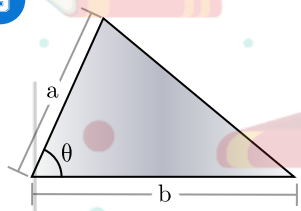
$$S = \frac{(b)(h)}{2}$$

2 TRIÁNGULO EQUILÁTERO



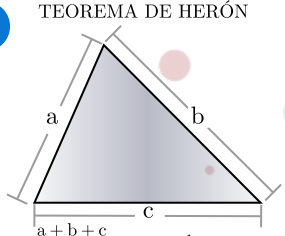
$$S = \frac{a^2\sqrt{3}}{4}$$

3 TEOREMA TRIGONOMÉTRICO



$$S = \frac{ab}{2}\text{sen}\theta$$

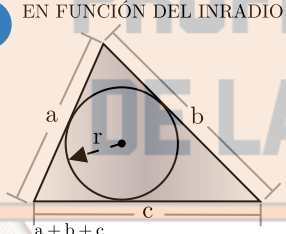
4 TEOREMA DE HERÓN



Si $p = \frac{a+b+c}{2}$, se cumple:

$$S = \sqrt{p(p-a)(p-b)(p-c)}$$

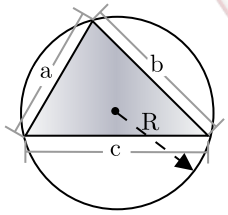
5 EN FUNCIÓN DEL INRADIO



Si $p = \frac{a+b+c}{2}$, se cumple:

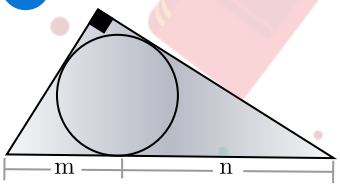
$$S = pr$$

6 EN FUNCIÓN DEL CIRCUNRADIO



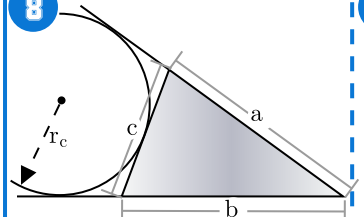
$$S = \frac{abc}{4R}$$

7 TEOREMA DE BURLET



$$S = mn$$

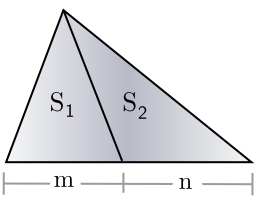
8 EN FUNCIÓN DEL EXRADIO



Si $p = \frac{a+b+c}{2}$, se cumple:

$$S = (p-c)r_c$$

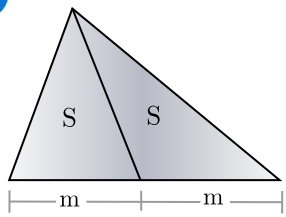
9 RELACIÓN ENTRE ÁREAS



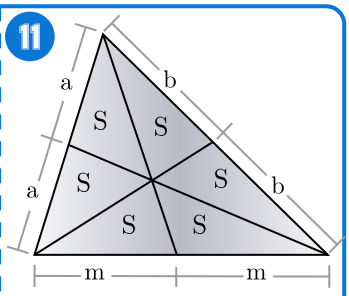
Se cumple:

$$\frac{S_1}{S_2} = \frac{m}{n}$$

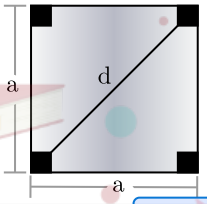
10



11

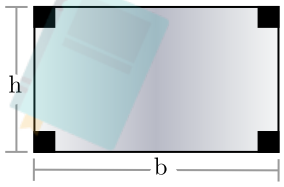


12 ÁREA DE UNA REGIÓN CUADRADA



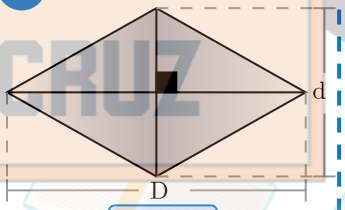
$$S = a^2 \qquad S = \frac{d^2}{2}$$

13 ÁREA DE UNA REGIÓN RECTANGULAR



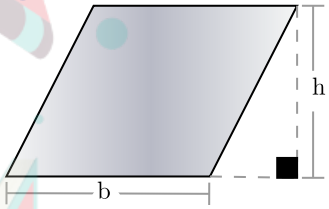
$$S = b.h$$

14 ÁREA DE UNA REGIÓN ROMBAL



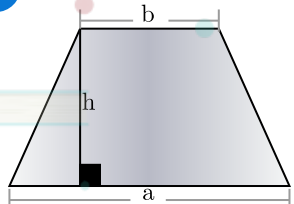
$$S = \frac{Dd}{2}$$

15 ÁREA DE UNA REGIÓN ROMBOIDAL



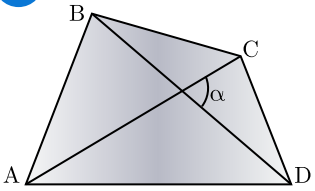
$$S = b.h$$

16 ÁREA DE UNA REGIÓN TRAPECIAL



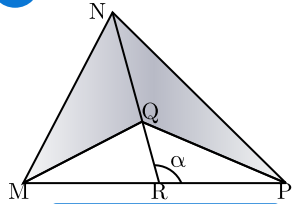
$$S = \frac{(a+b)h}{2}$$

17 ÁREA DE UNA REGIÓN CUADRANGULAR CONVEXA



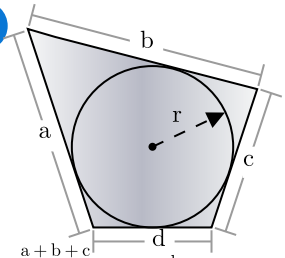
$$S = \frac{(AC)(BD)}{2}\text{sen}\alpha$$

18 ÁREA DE UNA REGIÓN CUADRANGULAR CÓNCAVA



$$S = \frac{(MP)(NQ)}{2}\text{sen}\alpha$$

19



Si $p = \frac{a+b+c}{2}$, se cumple:

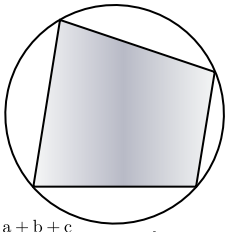
$$S = p.r$$

▸ S: área de la región sombreada.

ÁREAS DE REGIONES PLANAS II

TEMA 11

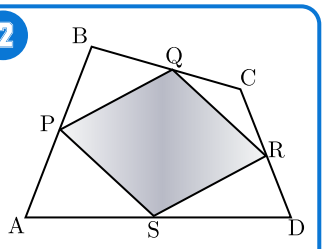
1



Si $p = \frac{a+b+c}{2}$, se cumple:

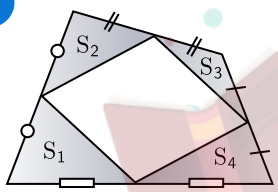
$S = (\sqrt{(p-a)(p-b)(p-c)(p-d)}$

2



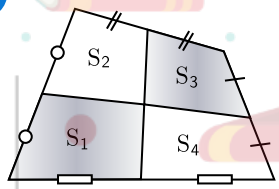
$S_{PQRS} = \frac{1}{2} S_{ABCD}$

3



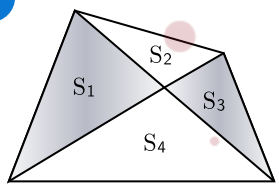
$S_1 + S_3 = S_2 + S_4$

4



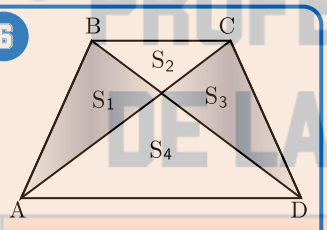
$S_1 + S_3 = S_2 + S_4$

5



$S_1 \cdot S_3 = S_2 \cdot S_4$

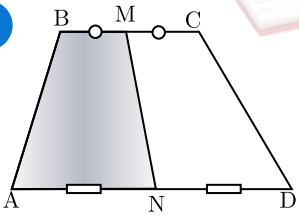
6



Si $\overline{BC} // \overline{AD}$, se cumple:

$S_1 = S_3 = \sqrt{S_2 \cdot S_4}$

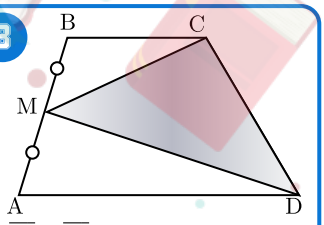
7



Si $\overline{BC} // \overline{AD}$, se cumple:

$S_{ABMN} = S_{NMCD}$

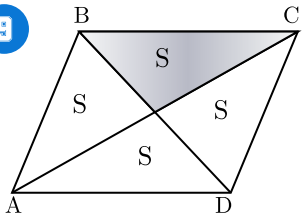
8



Si $\overline{BC} // \overline{AD}$, se cumple:

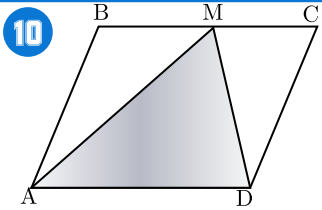
$S_{MCD} = \frac{1}{2} S_{ABCD}$

9



$S = \frac{1}{4} S_{ABCD}$

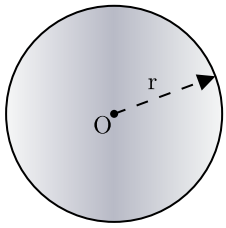
10



Si ABCD es un paralelogramo, y M un punto cualquiera de $\overline{BC}$, se cumple:

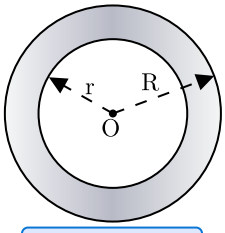
$S_{AMD} = \frac{1}{2} S_{ABCD}$

11 CÍRCULO



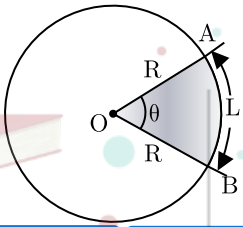
$S = \pi r^2$

12 CORONA CIRCULAR



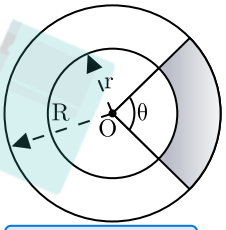
$S = \pi(R^2 - r^2)$

13 SECTOR CIRCULAR



$S_{\sphericalangle AOB} = \frac{\pi R^2 \theta}{360°}$ $S_{\sphericalangle AOB} = \frac{LR}{2}$

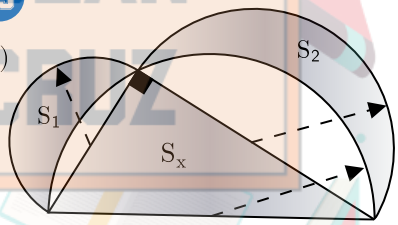
14 TRAPECIO CIRCULAR



$S = \frac{\pi(R^2 - r^2)\theta}{360°}$

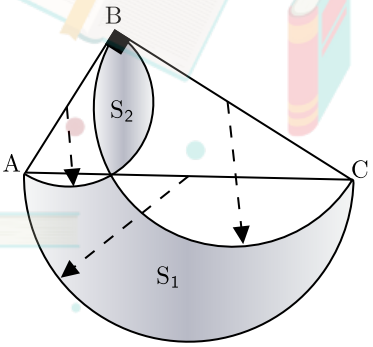
15 TEOREMA DE LAS LÚNULAS DE HIPÓCRATES

I)



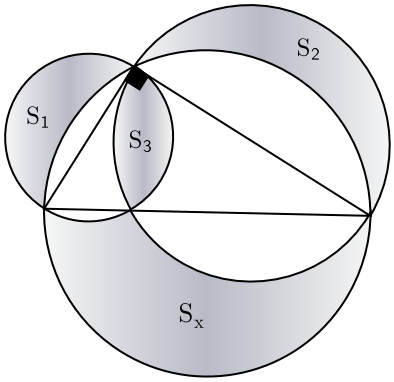
$S_x = S_1 + S_2$

II)



$S_{\triangle ABC} = S_1 - S_2$

III)



$S_x = S_1 + S_2 + S_3$

▸ S: área de la región sombreada.