



**KONGUNADU ARTS AND SCIENCE  
COLLEGE (AUTONOMOUS)  
DEPARTMENT OF MATHEMATICS**



**ACTIVITIES CONDUCTED UNDER DBT STAR COLLEGE  
SCHEME- 2023-2024 MODELS**



**GPS Map Camera**



**Gounder Mills, Tamil Nadu, India**

11/34B, Udayampalayam Rd, Pallakattu Thottam, Gounder Mills, Coimbatore, Tamil Nadu

641029, India

Lat 11.058995°

Long 76.948221°

28/02/24 11:28 AM GMT +05:30

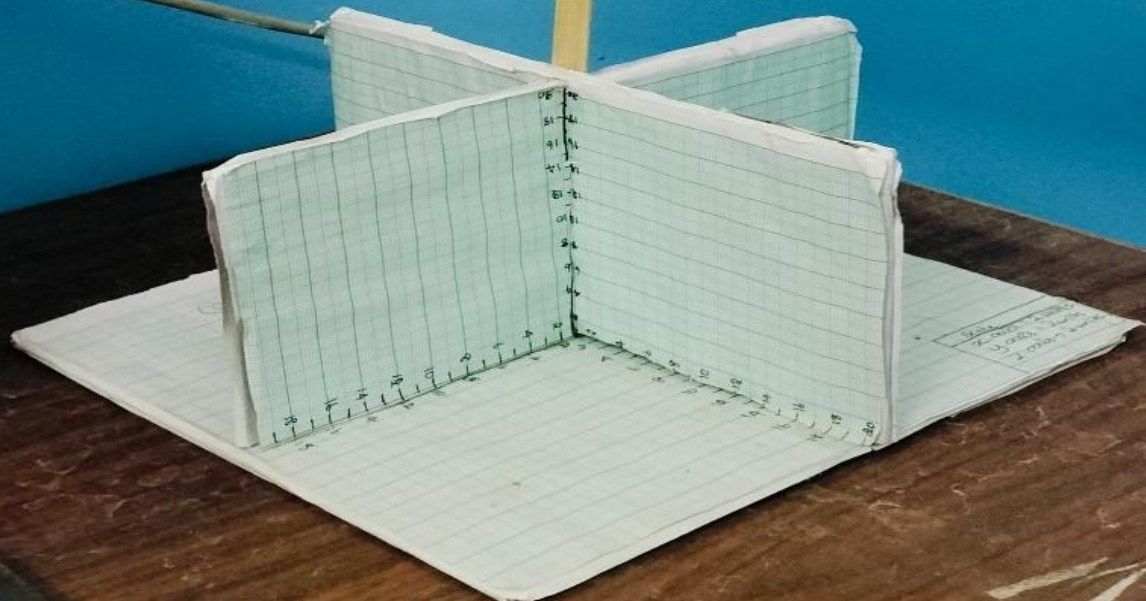


# VECTOR ALGEBRA

$$\begin{aligned}\vec{OP} &= x\hat{i} + y\hat{j} + z\hat{k} \\ \vec{OP} &= 12\hat{i} + 14\hat{j} + 16\hat{k}\end{aligned}$$

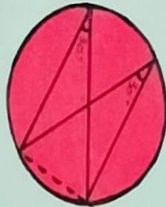
$$\begin{aligned}|\vec{OP}| &= \gamma \\ &= \sqrt{(12)^2 + (14)^2 + (16)^2} \\ &= \sqrt{144 + 196 + 256}\end{aligned}$$

$$\begin{aligned}\gamma &= \sqrt{596} \\ &= 24.4 \text{ Units}\end{aligned}$$

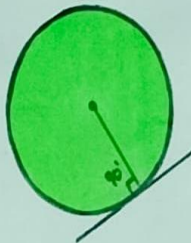


# CIRCLE THEOREMS

4



Angles in the  
same segment are  
equal



The Angle between  
a tangent and a  
radius is  $90^\circ$



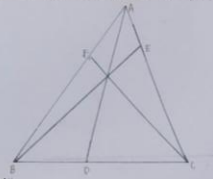
## CEVA'S AND MENELAUS THEOREMS

### CEVA'S THEOREM

STATEMENT:

Let  $\triangle ABC$  be a triangle and let  $D, E, F$  be points on sides  $BC, CA, AB$  respectively. Then the cevians  $AD, BE, CF$  are concurrent if and only if  $\frac{BD}{DC} \times \frac{CE}{EA} \times \frac{AF}{FB} = 1$ , where the

lengths are directed. This also works for the reciprocal of each of the ratios as the reciprocal of 1 is 1.



### MENELAUS THEOREM

STATEMENT:

A NECESSARY AND SUFFICIENT CONDITION OF POINTS  $P, Q, R$  ON THE RESPECTIVE SIDES  $BC, CA, AB$  OF A TRIANGLE  $ABC$  TO BE COLLINEAR IS THAT  $\frac{BP}{PC} \times \frac{CQ}{QA} \times \frac{AR}{RB} = -1$ , WHERE ALL SEGMENTS IN THE FORMULA ARE DIRECTED SEGMENTS.



41:  
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## PROBABILITY STATISTICS

Choose a number and roll the ball!

Bernoulli's formula:  
 $P + Q = 1$

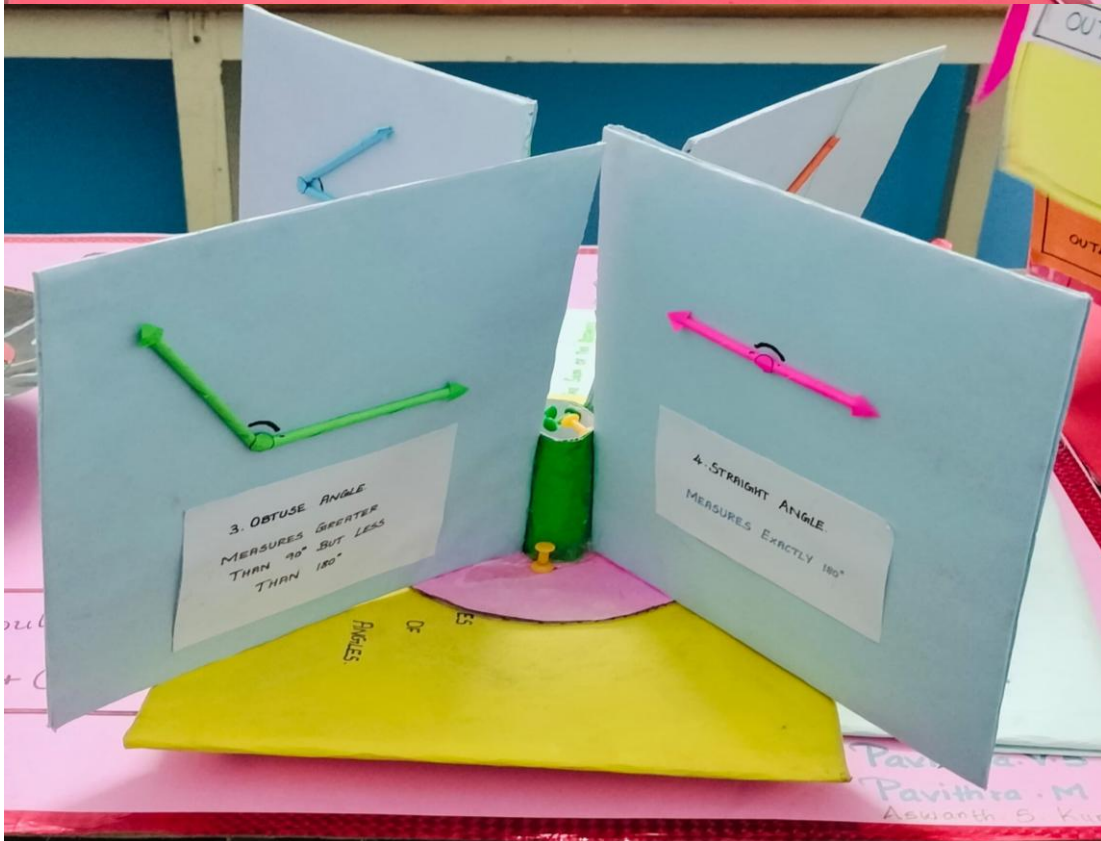
I. Bsc. Mathematics  
 Archi. N  
 Prathiksha. M  
 Pavithra. V. S  
 Pavithra. M  
 Anantha. S. Kumar

## RIEMANN STIELTJES INTEGRAL





Partition the region  
 $\Delta x = \Delta x_k \Delta y_k$   
 Choose the point  
 $(x_k, y_k)$ , find  
 $f(x_k, y_k)$

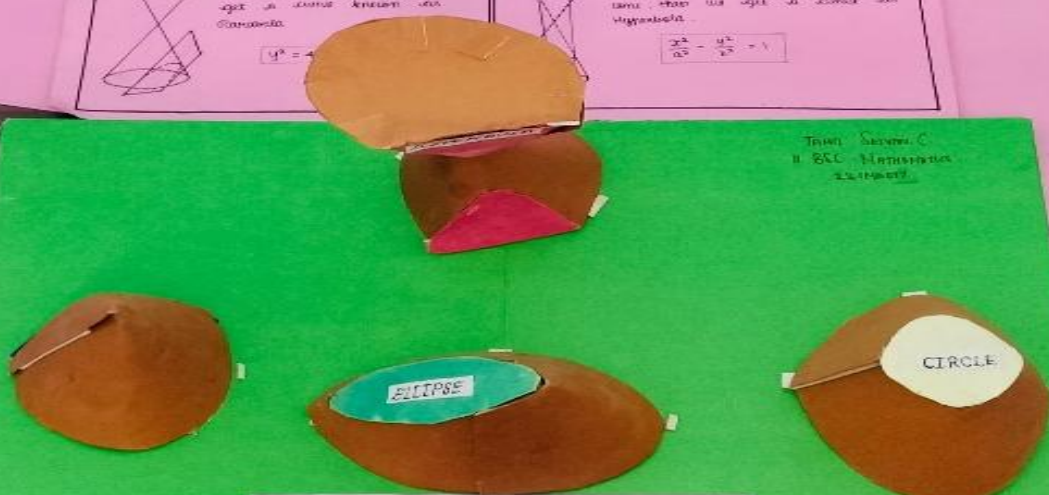
Volume  
 $= \sum_{k=1}^n f(x_k, y_k) \times \Delta x_k \Delta y_k$

Volume  
 $= \int_a^b \int_c^d f(x, y) dx dy$





Conic Sections	
<p><b>Circle</b></p> <p>When we intersect a plane with a cone in a plane parallel to the base, we get a circle called a circle.</p> $x^2 + y^2 = a^2$ 	<p><b>Ellipse</b></p> <p>When we intersect a cone with a plane parallel to the base, we get a closed curve called an ellipse.</p> $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ 
<p><b>Parabola</b></p> <p>When we intersect a cone with a plane parallel to the base, we get a curve known as a parabola.</p> $y^2 = 4ax$ 	<p><b>Hyperbola</b></p> <p>When we intersect a cone with a plane parallel to the base, we get a curve called a hyperbola.</p> $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ 



Tenth Semester C  
 II BSC Mathematics  
 22/11/2022

**CONIC SECTIONS**



