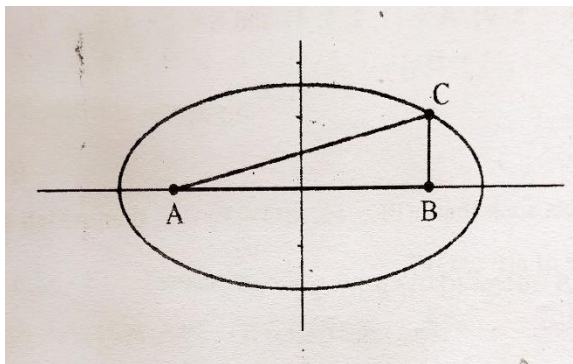


**CHAPTER 11  
CONIC SECTION**

**DECEMBER 2020**

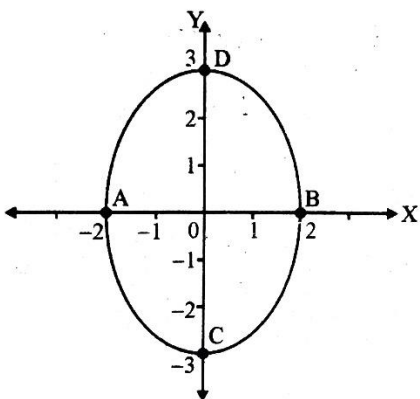
1. Consider the ellipse  $\frac{x^2}{25} + \frac{y^2}{9} = 1$ . A and B are foci of ellipse and BC perpendicular to AB.



- i) Find the coordinates of foci. (1)  
ii) Find the length of the sides of  $\triangle ABC$ . (3)

**MARCH 2020**

2. a) Let A(1,2) be a fixed point and P be a variable point in the same plane. P moves in the plane in such a way that its distance from A is always a constant. Suppose P is at the point (3,5), find the equation of the path traced by P. (2)  
b) Consider the following ellipse:



- i) Find the equation of the ellipse. (1)  
ii) Find the coordinates of foci. (1)

**IMPROVEMENT 2019**

3. Let S and S' foci of the ellipse  $\frac{x^2}{25} + \frac{y^2}{16} = 1$ . Let P be a point on the ellipse, then  
(i)  $PS + PS' = \dots\dots\dots$  (1)  
(ii) Find the coordinates of S and S'. (1)  
(iii) Find the length of the latus rectum. (1)
4. Consider the circle  $C : x^2 + y^2 - 4x + 6y - 12 = 0$   
a) Find the centre and radius of the circle C (1)  
b) Find the equation of another circle which is concentric with the circle C and double the radius of C. (2)  
c) Parabola  $y^2 = ax$ , which passes through the point (1,2), its focus is ..... (1)

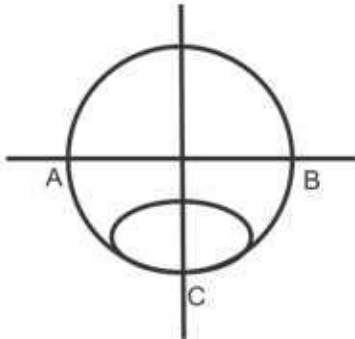
**MARCH 2019**

5. If an ellipse passing through (3,1) having foci  $(\pm 4, 0)$ , find  
a) the length of the major axis. (2)  
b) the standard equation of the ellipse. (2)  
c) the eccentricity and length of the latus rectum. (2)

**IMPROVEMENT 2018**

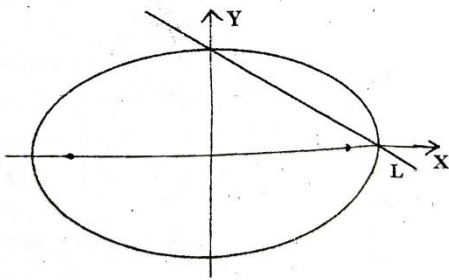
6. Foci of the ellipse in the given figure are  $(\pm \sqrt{12}, 0)$  and vertices are  $(\pm 4, 0)$ .  
a) Find the equation of the ellipse. (2)  
b) Write the equation of a circle with centre  $(0, k)$  and radius  $r$  (1)

- c) The circle in the figure passes through the points A, B and C on ellipse. Find the equation of a circle. (3)



**MARCH 2018**

7. Find the equation of the circle passing through the points(4,1) and (6,5) and whose centre is on the line  $4x + y = 16$ . (4)
8. The figure shows an ellipse  $\frac{x^2}{25} + \frac{y^2}{9} = 1$  and a line  $L$ .



- a) Find the eccentricity and focus of the ellipse. (2)
- b) Find the equation of the line  $L$ . (2)
- c) Find the equation of the line parallel to line  $L$  and passing through any one of the foci (2)

**IMPROVEMENT 2017**

9. a) The length of latus rectum of the parabola

$$y^2 = -8x . \quad (1)$$

- i) -8                      ii) 8  
iii) -4                    iv) 4

- b) Find the coordinates of foci, the vertices, the length of major axis, minor axis, the eccentricity and the latus rectum of the ellipse

$$\frac{x^2}{25} + \frac{y^2}{9} = 1 \quad (3)$$

**MARCH 2017**

10. a) Find the equation of the parabola with focus (6,0) and equation of the directrix is  $x = -6$ . (1)
- b) Find the coordinates of the foci, the vertices, the length of transverse and conjugate axis and eccentricity of the hyperbola  $\frac{x^2}{16} - \frac{y^2}{9} = 1$  (3)

**IMPROVEMENT 2016**

11. Find the foci, vertices, the eccentricity and the length of the latus rectum of the hyperbola  $16x^2 - 9y^2 = 144$  (4)

**MARCH 2016**

12. Find the foci, vertices , length of the major axis and eccentricity of the ellipse:  $\frac{x^2}{25} + \frac{y^2}{9} = 1$  (4)

**SEPTEMBER 2015**

13. Find the coordinates of the foci, vertices, eccentricity and the length of the latus rectum of the ellipse  $100x^2 + 25y^2 = 2500$ . (4)

**MARCH 2015**

14. a) Directrix of the parabola  $x^2 = -4ay$  is  
..... (1)
- i)  $x + a = 0$       ii)  $x - a = 0$   
iii)  $y - a = 0$       iv)  $y + a = 0$
- b) Find the equation of the ellipse whose length of the major axis is 20 and foci are  $(0, \pm 5)$  (3)

**IMPROVEMENT 2014**

15. a) Which one of the following equations represents a parabola, which is symmetrical about the positive y-axis? (1)
- i)  $y^2 = 8x$       ii)  $y^2 = -8x$   
iii)  $x^2 + 4y = 0$       iv)  $x^2 - 4y = 0$
- b) Find the equation of the ellipse whose vertices are  $(\pm 13, 0)$  and foci are  $(\pm 5, 0)$ . (3)

**MARCH 2014**

16. a) Consider the ellipse  $\frac{x^2}{25} + \frac{y^2}{9} = 1$ . Find the coordinates of the foci, the length of major axis, the length of the minor axis, latus rectum and eccentricity. (4)

**IMPROVEMENT 2013**

17. a) Find the centre and radius of the circle  $x^2 + y^2 - 8x + 10y - 12 = 0$ . (2)
- b) Determine eccentricity and length of latus rectum of the hyperbola  $\frac{x^2}{16} - \frac{y^2}{9} = 1$ . (2)

**MARCH 2013**

18. Find the coordinates of the foci, the length of the major axis, minor axis, latus rectum and eccentricity of the ellipse  $\frac{x^2}{25} + \frac{y^2}{9} = 1$ . (4)

**IMPROVEMENT 2012**

19. Find the equation of the hyperbola where foci are  $(0, \pm 8)$  and the length of the latus rectum is 24. (4)

**MARCH 2012**

20. A hyperbola whose transverse axis is x-axis, center  $(0,0)$  and the foci  $(\pm\sqrt{10}, 0)$  passes through the point  $(3,2)$ .
- a) Find the equation of the hyperbola. (3)  
b) Find its eccentricity. (1)

**IMPROVEMENT 2011**

21. i) Find the equation of the circle with centre  $(2,2)$  and passing through the point  $(2,5)$  (2)  
ii) Find the eccentricity and the length of latus rectum of the parabola  $x^2 + 16y = 0$ . (2)

**MARCH 2011**

22. i) Find the equation of the circle with center  $(2,2)$  and passing through the point  $(4,5)$ .  
ii) Find the eccentricity and the length of latus rectum of the ellipse  $4x^2 + 9y^2 = 36$ .

**IMPROVEMENT 2010**

23. Consider the conic  $9y^2 - 4x^2 = 36$ . Find
- a) The foci (2)  
b) Eccentricity (1)  
c) Length of latus rectum. (1)

**MARCH 2010**

24. An ellipse whose major axis as x-axis and the centre (0,0) passes through (4,3) and (-1,4).
- i) Find the equation of the ellipse. (2)
  - ii) Find its eccentricity. (2)

**IMPROVEMENT 2009**

25. Consider the circle  $x^2 + y^2 + 8x + 10y - 8 = 0$
- i) Find the centre C and radius 'r'. (1)
  - ii) Find the equation of the circle with centre at C and passing through the point (1,2). (2)
26. i) Find the equation of the parabola with vertex at (0,0) and focus at (0,2). (1)
- ii) Find the co-ordinates of the foci and the latus rectum of the ellipse  $\frac{x^2}{25} + \frac{y^2}{9} = 1$ . (2)

**MARCH 2009**

27. a) Find the center and radius of the circle  $2x^2 + 2y^2 - x = 0$  (2)
- b) Find the equation of the parabola with focus (6,0) and directrix  $x = -6$  (2)

**MARCH 2008**

28. i) The circle whose equation is  $x^2 + (y - 1)^2 = 2$  has the centre ..... (1)
- ii) Find the equation of the tangent of the circle  $x^2 + y^2 = 13$  at the point (2,3). (2)
29. State whether the following is True or False:  
The line  $x + y = 0$  intersects the circle  $x^2 + y^2 = 1$  in two points. (1)

