

INTERNAL ASSESSMENT

1ST SEMESTER

ANSWER ANY TWO QUESTIONS

EACH QUESTION CARRIES 5 MARKS

MARKS -10

1. Determine whether the following curve has one center, no center or infinitely many centers

$$4x^2 + 4xy + y^2 + 4x + 2y + 20 = 0$$

2. EVALUTE:

$$\lim_{x \rightarrow 1} \operatorname{cosec}(\pi x) \ln x = 1$$

3. Find the equation to the curve $9x^2 + 4y^2 + 18x - 16y - 11 = 0$ referred to the parallel axes through the point $(-1, 2)$.

4. Transform the equation $x^2 - y^2 = a^2$ if the axes are rotated through an angle 45° .

INTERNAL ASSESSMENT

3RD SEMESTER

ANSWER ANY TWO QUESTIONS

EACH QUESTION CARRIES 5 MARKS

MARKS -10

1. Show that the sequence $\left\{\frac{2n+1}{n+4}\right\}$ is monotonic increasing and bounded.
2. Show that the series $\frac{1}{3} + \frac{2}{4} + \frac{3}{5} + \frac{4}{6} + \dots$ diverges.
3. Prove that every convergent sequence is bounded.
4. Find the derived set of $S = \left\{\frac{2}{p} + \frac{3}{q} : p, q = 1, 2, 3, \dots\right\}$