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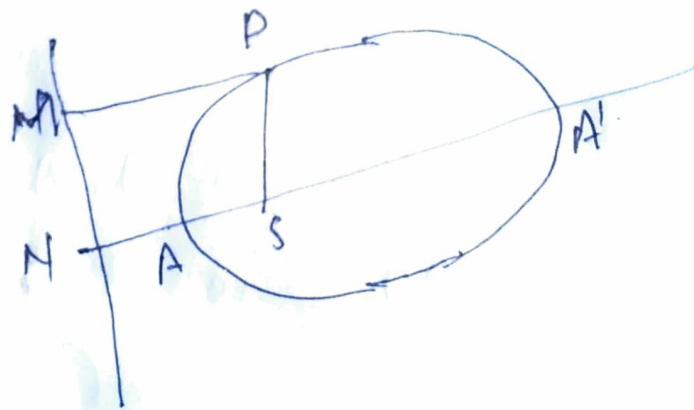
D₁ - Mathematics

Topic - Ellipse

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- ① Definition of ellipse:- An ellipse is the locus of a point which moves in a plane so that the ratio of its distance from a fixed point in the plane to its distance from a fixed straight line in the same plane is a constant quantity less than unity.
The fixed point is called the focus, the

fixed straight line is called the directrix and the constant ratio



is called the eccentricity.

Eccentricity is denoted by e and it is less than unity

i.e. $e < 1$.

Note - The shape of an ellipse - If P is on the ellipse, the focus be the point S and the directrix ZN , $PS < PM$ where $PM \perp ZN$.

So P must be on that side of the directrix on which the focus S lies.

Let $SM \perp ZN$. PS & NS can be divided by a point in the ratio

$e = \frac{PS}{PM}$ internally and externally, the ellipse will cut SN at two points A, A' only (the points being on the same side of ZN). So the shape of an ellipse is that of a closed curve as shown in the figure

