## 36 Lecture - MTH101

## Important Mcqs

Which formula is used to calculate the length of a curve?
a) The area formula
b) The perimeter formula
c) The arc length formula
d) The tangent line formula

Solution: c) The arc length formula is used to calculate the length of a curve.

What is the arc length formula?
a) $L=?[a, b] ?\left(1+(d y / d x)^{2}\right) d x$
b) $L=?[a, b](d y / d x) d x$
c) $L=?[a, b] ?\left(1+(d x / d y)^{2}\right) d y$
d) $\mathrm{L}=?[\mathrm{a}, \mathrm{b}](\mathrm{dx} / \mathrm{dy}) \mathrm{dy}$

Solution: a) The arc length formula is $L=?[a, b] ?\left(1+(d y / d x)^{2}\right) d x$.

Which of the following is a smooth curve?
a) A piecewise linear curve
b) A parabolic curve
c) A circle
d) A fractal curve

Solution: b) A parabolic curve is a smooth curve, as it has a continuous and differentiable derivative.

How do we find the length of a circle?
a) $\mathrm{L}=? \mathrm{r}^{2}$
b) $\mathrm{L}=2$ ? r
c) $L=? d$
d) $L=2$ ? d

Solution: b) The length of a circle is given by the formula $\mathrm{L}=2$ ?r.

How do we find the length of a straight line segment?
a) $L=x ?-x$ ?
b) $L=y$ ? $-y$ ?
c) $L=?\left((x ?-x ?)^{2}+(y ?-y ?)^{2}\right)$
d) $L=(x ?-x ?)+(y ?-y ?)$

Solution: c) The length of a straight line segment is given by the distance formula $L=?\left((x ?-x ?)^{2}+(y ?-\right.$ $y$ ? $)^{2}$ ).

Can we use the arc length formula for non-smooth curves?
a) Yes
b) No

Solution: a) Yes, we can use the arc length formula for non-smooth curves by dividing the curve into small sections and approximating its length using the formula for each section.

What is the length of the $x$-axis?
a) 0
b) 1
c) -1
d) ?

Solution: a) The length of the x -axis is 0 , as it is a straight line with no width.

## What is the length of the unit circle?

a) ?
b) 2 ?
c) 3 ?
d) 4 ?

Solution: b) The length of the unit circle is 2 ?, as it has a radius of 1 .

## How do we find the length of an ellipse?

a) Using a simple formula
b) Using numerical methods
c) Using the arc length formula
d) Using the Pythagorean theorem

Solution: b) The length of an ellipse cannot be found using a simple formula, but it can be approximated using numerical methods.

Can we use the Pythagorean theorem to find the length of a curve?
a) Yes
b) No

Solution: b) No, the Pythagorean theorem cannot be used to find the length of a curve, as it only applies to right triangles.

