

## UNIT-3

### SINGLE VARIABLE CALCULUS

#### Multiple Choice questions

1.	For the function $f(x) = 1/x$ , in $[-1, 1]$ , Rolles mean value theorem cannot be applicable, due to _____
	<div>a) <math>f</math> is not continuous</div> <div>b) <math>f</math> is not derivable</div> <div>c) <math>f(1) \neq f(-1)</math></div> <div>d) all the above</div>
2.	for $f(x) =  x $ in $[-1, 1]$ , Rolles mean value theorem cannot be applicable, due to _____
	<div>a) <math>f</math> is not continuous</div> <div>b) <math>f</math> is not derivable</div> <div>c) <math>f(1) \neq f(-1)</math></div> <div>d) all the above</div>
3.	for $f(x) =  x $ in $[-1, 1]$ , Rolles mean value theorem cannot be applicable, due to _____
	<div>a) 0</div> <div>b) 1</div> <div>c) 2</div> <div>d) 4</div>
4.	The curve $y = ax^2$ is symmetric about _____
	<div>a) Y- axis</div> <div>b) x- axis</div> <div>c) origin</div> <div>d) <math>x = a</math></div>
5.	The curve $x^2 = 4ay$ intersects x- axis at _____
	<div>a) (0, 0)</div> <div>b) (a, 0)</div> <div>c) (0, a)</div> <div>d) (a, a)</div>
6.	The asymptote of the curve $x^2 = 4ay$ is _____
	<div>a) X- axis</div> <div>b) Y- axis</div> <div>c) <math>y = a</math></div> <div>d) No asymptotes</div>
7.	The value of "c" of Cauchy's theorem for $f(x) = \sqrt{x}$ and $g(x) = \frac{1}{\sqrt{x}}$ in $[a, b]$ is _____
	<div>a) <math>\sqrt{ab}</math></div> <div>b) <math>\frac{a-b}{2}</math></div> <div>c) <math>\frac{a+b}{2}</math></div> <div>d) <math>\frac{2ab}{a+b}</math></div>
8.	The value of "c" of Rolles theorem for $f(x) = \frac{\sin x}{e^x}$ in $(0, \pi)$ is _____
	<div>a) <math>\pi</math></div> <div>b) <math>\frac{\pi}{4}</math></div> <div>c) <math>\frac{\pi}{3}</math></div> <div>d) <math>\frac{\pi}{2}</math></div>
9.	The series expansion of $\sin x$ is _____

	a) $x + x^2 + x^3 + \dots$ b) $1 + x + x^2 + x^3 + \dots$ c) $1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \dots$ d) $x - \frac{x^3}{3!} + \frac{x^5}{5!} - \dots$
10	If there are many tangents at a point on a curve, then it is ____ [
	a) Not derivable at that point      b) Not continuous at that point c) Derivable at that point      d) Continuous at that point
<b>Fill in the blanks</b>	
1.	The value of 'c' is _____ of Lagrange's mean value theorem for $f(x) = x^2$ in $[1, 5]$
2	The value of 'c' of Cauchy's theorem for $f(x) = x^2$ and $g(x) = x^3$ in $[1, 2]$ is _____
3	The expansion $\cos x$ in powers of "x" is _____
4	The value of c by Rolle's mean value theorem for $f(x) = x^2$ in $[-1, 1]$ is _____
5	If a function $f(x)$ is both continuous in $[a, b]$ and derivable in $(a, b)$ then $f'(c) =$ _____ for some c in $(a, b)$ .
6	For a continuous function defined in $[a, b]$ , Lagrange's mean value theorem is not applicable when the function is not _____ in $(a, b)$ .
7	The condition to check whether a function is symmetric about origin is _____
8	The tangent to the curve $y^2 = 4ax$ at origin is _____
9	The curve $f(x)$ is symmetric about both the axis if _____
10	The curve $x^2 + y^2 = a^2$ is symmetric about X- axis. Is this True? _____