## 13 Lecture - MTH101

## Important Mcqs

What is the limit of the sine function as x approaches infinity?
a) 0
b) 1
c) does not exist
d) -1

Answer: c) does not exist

What is the limit of the cosine function as $x$ approaches ?/2?
a) 0
b) 1
c) does not exist
d) -1

Answer: c) does not exist

What is the derivative of the function $f(x)=\cos (x)-2 \sin (x)$ ?
a) $-\cos (x)-2 \cos (x)$
b) $-\sin (x)-2 \cos (x)$
c) $\sin (x)-2 \cos (x)$
d) $-\sin (x)+2 \cos (x)$

Answer: b) $-\sin (\mathrm{x})-2 \cos (\mathrm{x})$

Which of the following trigonometric functions has a vertical asymptote at $\mathrm{x}=\boldsymbol{?} / \mathbf{2}$ ?
a) sine
b) cosine
c) tangent
d) none of the above

## Answer: c) tangent

What is the limit of the tangent function as x approaches $\mathbf{? / 2}$ from the left?
a) - ?
b) ?
c) does not exist
d) 0

## Answer: a) - ?

Which of the following trigonometric functions is continuous on the entire real line?
a) sine
b) cosine
c) tangent
d) none of the above

Answer: d) none of the above

What is the derivative of the function $f(x)=\sin (x) \cos (x)$ ?
a) $\cos ^{\wedge} 2(x)$
b) $-\cos ^{\wedge} 2(x)$
c) $2 \sin (x) \cos (x)$
d) $-2 \sin (x) \cos (x)$

Answer: c) $2 \sin (\mathrm{x}) \cos (\mathrm{x})$

Which of the following functions is not continuous at $x=0$ ?
a) $\sin (x) / x$
b) $\cos (x) / x$
c) $\tan (x) / x$
d) all of the above are continuous at $x=0$

## Answer: c) $\tan (\mathrm{x}) / \mathrm{x}$

What is the limit of the function $f(x)=\sin (1 / x)$ as $x$ approaches 0 ?
a) 0
b) does not exist
c) 1
d) -1

Answer: b) does not exist

What is the maximum value of the function $f(x)=2 \sin (x)+3 \cos (x)$ on the interval [0, 2?]?
a) 5
b) -5
c) 2
d) 3

Answer: a) 5

