

## Differentiability - Class XII

### Related Questions with Solutions

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#### Questions

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##### Question: 01

$f(x) = |x| + |\sin x|$  in  $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ . It is:

- A. Continuous nowhere
- B. Continuous every where
- C. Differentiable nowhere
- D. Differentiable everywhere except at  $x = 0$

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#### Solutions

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##### Solution: 01

$$x \in \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$$

$|x|$  is not differentiable at  $x = 0$

$|\sin x|$  is not differentiable at  $x = 0$

$f[x]$  is continuous every where

$$f(x) = \begin{cases} x + \sin x, & 0 \leq x < \pi/2 \\ -x - \sin x, & -\pi/2 < x < 0 \end{cases}$$

$$\left. \begin{aligned} f'(0^-) &= -1 - 1 = -2 \\ f'(0^+) &= 1 + 1 = 2 \end{aligned} \right\}$$

not differentiable at  $x = 0$

Option B,D

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#### Correct Options

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Answer:01

Correct Options: B, D