

CC 08 1ST INTERNAL

Answer all the following questions

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1. The value of R-integrability of $f(x) = \begin{cases} x + x^2, & x \in [0,2] \cap \mathbb{Q} \\ x^2 + x^3, & x \in [0,2] \cap \mathbb{Q}^c \end{cases}$ which is defined on $[0,2]$, is

- a) $\frac{83}{12}$ b) $\frac{53}{12}$ c) $\frac{12}{83}$ d) none of these

- a
 b
 c
 d

2. The value of $\Gamma(m)\Gamma\left(m + \frac{1}{2}\right)$ is

- a) $\frac{\sqrt{\pi}\Gamma(m)}{2^m}$ b) $\frac{\sqrt{2\pi}\Gamma(2m)}{2^m}$ c) $\frac{\sqrt{\pi}\Gamma(2m)}{2^{2m-1}}$ d) $\frac{\sqrt{\pi}\Gamma(m)}{2^{m-1}}$

- a
 b
 c
 d



3. For function $f(x) = x$ in the interval $[0,3]$ and let $P = \{0,1,2,3\}$ be the partition of $[0,3]$, then value of $L(P, f)$ is

- a) 0 b) 3 c) 6 d) 9

- a
 b
 c
 d

4. The value of $\Gamma\left(\frac{1}{n}\right) \Gamma\left(\frac{2}{n}\right) \Gamma\left(\frac{3}{n}\right) \dots \Gamma\left(\frac{n-1}{n}\right)$ is

- a) $\frac{\pi^{n-1}}{\sqrt{n-1}}$ b) $\frac{(2\pi)^{\frac{n-1}{2}}}{\sqrt{n}}$ c) $\frac{(3\pi)^{\frac{2n-1}{2}}}{\sqrt{2n}}$ d) none of these

- a
 b
 c
 d

5. The Fourier series for $|\sin x|$ in $-\pi \leq x \leq \pi$; the value of $\sum_{n=1}^{\infty} \frac{1}{4n^2-1}$ is

- a) 1 b) $\frac{1}{2}$ c) $\frac{1}{3}$ d) $\frac{1}{4}$



a

b

c

d

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