Math102 Term182

Sec 2 Quiz 1

Name	ID	Sr

Instruction: CIRCLE one answer and SHOW all your work to get full mark

Q1) The limit

$$\lim_{n\to\infty}\sum_{i=1}^{n}\frac{\pi}{4n}\sin^2\left(\frac{\pi i}{4n}+\frac{\pi}{3}\right)$$

can be interpreted as the area under the curve

a) $y=\sin^2(x+\frac{\pi}{3})\ on\left[0,\frac{\pi}{3}\right]$

b) $y=\sin^2(x^2)\ on\left[\frac{\pi}{4},\frac{\pi}{3}\right]$

c) $y=sin(x^2)\ on\left[0,\frac{\pi}{3}\right]$

d) $y=sin(x^2)\ on\left[0,\frac{\pi}{4}\right]$

e) $y=\sin^2(x)\ on\left[\frac{\pi}{3},\frac{7\pi}{12}\right]$

Q2) If R_n is the Riemann sum for $f(x)=x^2+2x\ \ ,1\le x\le 4,$ with n subintervals and taking the sample points to be the right endpoints, then $R_n=$

a) $9+18\frac{n+1}{n}+\frac{9(n+1)(2n+1)}{2n^2}$

b) $9+9\frac{n+1}{n}+\frac{9}{2}\frac{(n+1)(2n+1)}{n^2}$

c) $20\frac{n+1}{n}+\frac{16(n+1)(2n+1)}{2n^2}$

d) $18\frac{n+1}{n}+\frac{9(n+1)(2n+1)}{n^2}$

e) $18+\frac{9(n+1)(2n+1)}{2n^2}$

Q3) Using the comparison properties of the integrals (Property 8) to estimate $I = \int_0^{\pi} \sqrt{2 + sinx}$, we get :

a) $\sqrt{2} \leq I \leq \sqrt{3}$

b) $0 \leq I \leq \sqrt{2}$

c) $-\sqrt{3} \leq I \leq -\sqrt{2}$

d) $\pi\sqrt{2} \leq I \leq \pi\sqrt{3}$

e) $\frac{\pi}{2} \leq I \leq \pi$

Q4) If $F(x) = \int_1^x f(t)dt$ and $f(t) = \int_1^{t^2} \sin(1 + u^2)du$, then $F''(1) =$

a) $\sin(1)$

b) $\sin(2)$

c) $2\sin(2)$

d) $4\sin(2)$

e) $2sin(2)\ cos(2)$

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Sec5 Quiz 1

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Q1) Using **three rectangles and left endpoints**, the approximation of the area under the graph of $f(x) = \frac{1}{x+1}$ from $x = 1$ to $x = 3$ is equal to:

a) $\frac{33}{25}$

b) $\frac{27}{20}$

c) $\frac{49}{50}$

d) $\frac{25}{38}$

e) $\frac{47}{60}$

Q2) If R_n is the Riemann sum for $f(x) = x^2 + 2x \quad, 1 \leq x \leq 3,$ with n subintervals and taking the sample points to be the right endpoints, then $R_n =$

a) $6 + \frac{8(n+1)}{n} + \frac{2(n+1)(2n+1)}{3n^2}$

b) $15 - \frac{(n+1)}{n} + \frac{4(n+1)(2n+1)}{3n^2}$

c) $\frac{20(n+1)}{n} + \frac{4(n+1)(2n+1)}{3n^2}$

d) $4 + \frac{10(n+1)}{n} + \frac{4(n+1)(2n+1)}{3n^2}$

e) $6 + \frac{8(n+1)}{n} + \frac{4(n+1)(2n+1)}{3n^2}$

Q3)

$$\lim_{n\to\infty}\sum_{i=1}^{n}\frac{2\pi}{n}tan^{-1}\left(2\pi+\frac{\pi i}{n}\right)=$$

a) $\int_{2\pi}^{3\pi} 2\tan^{-1}(x)\,dx$

b) $\int_{0}^{\pi} \tan^{-1}(x+\pi)\,dx$

c) $\int_{\pi}^{2\pi} \tan^{-1}(x+3\pi)\,dx$

d) $\int_{\pi}^{2\pi} 2\tan^{-1}(x+5\pi)\,dx$

e) $\int_{2\pi}^{3\pi} \tan^{-1}(x)\,dx$

Q4) If g is a continuous function such that $\int_{\pi}^{x} e^{-t}\, g(t)dt=\pi^2+xsinx$ for all x , then $g(x)$

a) $xe^{x}\sin x$

b) $e^{x}\cos x$

c) $e^{x}(2\pi+\ x\cos x+\sin x)$

d) $e^{x}(x\cos x+\sin x)$

e) $e^{x}cosx$

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Sec 19 Quiz 1

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Q1) Using **three rectangles and midpoints**, the approximation of the area under the graph of $f(x) = \frac{x}{x-1}$ from $x = 2$ to $x = 8$ is equal to:

a) $\frac{29}{3}$

b) $\frac{41}{12}$

c) $\frac{47}{12}$

d) $\frac{136}{15}$

e) $\frac{47}{6}$

Q2) If R_n is the Riemann sum for $f(x) = x^2 + 2x \quad , 1 \leq x \leq 3,$ with n subintervals and taking the sample points to be the right endpoints, then $R_n =$

a) $\frac{8(n+1)}{n} + \frac{4(n+1)(2n+1)}{3n^2}$

b) $10 + \frac{20(n+1)}{3n}$

c) $-\frac{n+1}{2n} - \frac{(n+1)(2n+1)}{6n^2}$

d) $4 + \frac{10(n+1)}{n} + \frac{4(n+1)(2n+1)}{3n^2}$

e) $6 + \frac{8(n+1)}{n} + \frac{4(n+1)(2n+1)}{3n^2}$

Q3)

$$\lim_{n\to\infty}\sum_{i=1}^{n}\frac{6}{n}ln\left(2+\frac{3i}{n}\right)=$$

a) $\int_2^5 \ln(x)\,dx$

b) $\int_2^5 2\ln(x)\,dx$

c) $\int_0^3 \ln(1+x)\,dx$

d) $\int_1^4 \ln(2+x)\,dx$

e) $\int_1^4 \ln(6+x)\,dx$

Q4) If g is a continuous function such that

$$\int_{\pi}^{2x+1} e^{t/2}\, g(t)dt = xe^{x}\, , then\ g(7)$$

a) $\frac{2}{\sqrt{e}}$

b) $\frac{4}{\sqrt{e}}$

c) $4\, e^{-8}$

d) $8\, e^{-8}$

e) $\frac{7}{2e^{8}}$

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Sec24 Quiz 1

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Q1) The limit

$$\lim_{n\to\infty}\sum_{i=1}^{n}\frac{5}{n}\left(\frac{5i}{n}+3\right)^4$$

can be interpreted as the area under the curve

a) $y = x^4$ on $[0,5]$

b) $y = x^4$ on $[5,10]$

c) $y = x^4$ on $[3,8]$

d) $y = \frac{x^5}{5}$ on $[0,5]$

e) $y = (x+5)^4$ on $[0,5]$

Q2) If R_n is the Riemann sum for $f(x) = x^2 - 2x \ \ , 1 \le x \le 4$, with n subintervals and taking the sample points to be the right endpoints, then $R_n =$

a) $1 + \frac{2(n+1)}{n} + \frac{3(n+1)(2n+1)}{2n^2}$

b) $-3 + \frac{9(n+1)(2n+1)}{6n^2}$

c) $\frac{n+1}{n} + \frac{5(n+1)(2n+1)}{2n^2}$

d) $-3 + \frac{9(n+1)(2n+1)}{2n^2}$

e) $-6 + \frac{9(n+1)(2n+1)}{2n^2}$

Q3) Using the comparison properties of the integrals (Property 8) to estimate $I = \int_{-2}^{0} xe^x$, we get :

a) $0 \leq I \leq \frac{2}{e^2}$

b) $-\frac{4}{e^2} \leq I \leq 0$

c) $-\frac{1}{e} \leq I \leq 1$

d) $-\frac{2}{e^2} \leq I \leq 0$

e) $-\frac{2}{e} \leq I \leq 0$

Q4) If

$$f(x) = \int_{\sin x}^{\cos(3x)} \frac{1}{\sqrt{1+4t^2}} dt ,$$

then $f'\left(\frac{\pi}{2}\right) =$

a) 3

b) $\frac{3}{5}$

c) $-\frac{14}{5}$

d) $\frac{16}{5}$

e) 2