King Fahd University of Petroleum and Minerals
Department of Math & Stat
Math 102 Section # 4, 5, 8 (091)
Quiz 5(a)

Time: 20 minutes Marks: _____/9

Name: _____ Section #: _____

ID #: _____ Serial #: _____

1. The radius of convergence R and interval of convergence I of the series $\sum_{k=1}^{\infty}(-1)^{k+1}\frac{(x+1)^k}{k}$ are

   (a) $R=2,\ I=(1,2)$

   (b) $R=1,\ I=(-2,2)$

   (c) $R=2,\ I=[-2,1)$

   (d) $R=1,\ I=(-2,0]$

   (e) $R=2,\ I=(-2,2)$

2. The Maclaurin series of $f(x)=x\cos(x^3)$ is

   (a) $\sum_{n=0}^{\infty}(1)^n\frac{x^{5n+1}}{(2n)!}$

   (b) $\sum_{n=0}^{\infty}(-1)^n\frac{x^{6n+1}}{(2n)!}$

   (c) $\sum_{n=0}^{\infty}\frac{x^{6n}}{(2n)!}$

   (d) $\sum_{n=0}^{\infty}(-1)^n\frac{x^{6n+1}}{(6n+1)!}$

   (e) $\sum_{n=0}^{\infty}(-1)^n\frac{x^{3n+1}}{(2n)!}$

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Quiz 5(b)

Time: 20 minutes Marks: _____/9

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1. The power series representation of $f(x) = \ln(5 - x)$ is

   (a) $\displaystyle\sum_{n=0}^{\infty}(-1)^n \frac{1}{n+1}$

   (b) $\displaystyle -\frac{1}{5}\sum_{n=0}^{\infty}\frac{x^{n+1}}{5^n(n+1)}$

   (c) $\displaystyle\sum_{n=0}^{\infty}(-1)^n \frac{x^{2n+1}}{2n+1}$

   (d) $\displaystyle\sum_{n=1}^{\infty}\frac{(x+1)^n}{n}$

   (e) $\displaystyle\sum_{n=0}^{\infty}\frac{x^{2n}}{2n+1}$

2. The interval of convergence of the power series $\displaystyle\sum_{n=1}^{\infty}\frac{(2x-1)^n}{n^3}$ is

   (a) $[0, 1/2]$

   (b) $[0, 1]$

   (c) $(0, 1)$

   (d) $(-\infty, \infty)$

   (e) $\{0\}$

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Time: 20 minutes Marks: _____/9

Name: _____ Section #: _____

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1. The Maclaurin series of the function $f(x) = x\,e^x$ is

   (a) $\displaystyle\sum_{n=1}^{\infty} \frac{x^{2n}}{(2n)!}$

   (b) $\displaystyle\sum_{n=1}^{\infty} \frac{x^{n}}{(n-1)!}$

   (c) $\displaystyle\sum_{n=0}^{\infty} \frac{x^{n}}{(n-3)!}$

   (d) $\displaystyle\sum_{n=1}^{\infty} \frac{x^{n-1}}{n!}$

   (e) $\displaystyle\sum_{n=0}^{\infty} \frac{x^{2n-1}}{(2n-1)}$

2. The radius of convergence R and interval of convergence I of the series $\displaystyle\sum_{n=2}^{\infty} \frac{x^n}{2^n \ln n}$ are

   (a) $R = 2,\ I = [-2, 2)$

   (b) $R = 2,\ I = (-2, 2]$

   (c) $R = 1,\ I = (-1, 0)$

   (d) $R = 1,\ I = (-1, 1)$

   (e) $R = 2,\ I = [-2, 2]$

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1. If $f(x) = \sum_{n=1}^{\infty} \frac{x^n}{n^2}$, then interval of convergence for f' is

   (a) $(0, 1)$

   (b) $(1, 2)$

   (c) $(-1, 1)$

   (d) $[-1, 2)$

   (e) $[-1, 1)$

2. The sum of the series $\sum_{n=0}^{\infty}(-1)^n \frac{\pi^{2n+1}}{(2n+1)!3^{2n+1}}$ is

   (a) 1

   (b) $\ln(2)$

   (c) $e^{3/4}$

   (d) $\frac{\sqrt{3}}{2}$

   (e) $\sqrt{2}$