King Fahd University of Petroleum and Minerals
Math 102, Quiz 5, Term 163

VERSION IV

Name: .....

Student Number: .....

1. The series $\sum_{n=1}^{\infty} n^2 e^{-n^3}$ is

   (a) diverges

   (b) converges to e

   (c) converges to e^{-3}

   (d) converges to $\frac{1}{3e}$

   (e) converges to 0

2. The sequence $\left\{(2n+1)\sin\frac{7}{n}\right\}$

   (a) converges to $\frac{7}{2}$

   (b) converges to 14

   (c) diverges

   (d) converges to 0

   (e) converges to $\frac{2}{7}$

3. The series $\sum_{k=1}^{\infty} \left(\frac{7}{8}\right)^{k-1}$

   (a) converges to 7

   (b) diverges

   (c) converges to 0

   (d) converges to 8

   (e) converges to $\frac{7}{8}$

4. The surface area obtained by rotating the surface $y = 1 - x^2$ about the y-axis, $0 \leq x \leq 1$ is

   (a) $\frac{\pi}{6}(5\sqrt{5} - 1)$

   (b) $\frac{\pi}{6}(5\sqrt{5})$

   (c) $\frac{5\pi}{3}$

   (d) 0

   (e) $\frac{\pi}{6}$

5. The length of the curve $y = \ln(\cos x),\ 0 \le x \le \dfrac{\pi}{4}$, is

   (a) $1 + \sqrt{2}$

   (b) $\ln(\sqrt{2} + \sqrt{3})$

   (c) $2 + \sqrt{2}$

   (d) $\ln(1 + \sqrt{2})$

   (e) $\ln(\sqrt{2})$

6. The series $\displaystyle\sum_{n=1}^{\infty} \frac{n-1}{n^2+1}$ is

   (a) divergent by alternating series test

   (b) convergent by limit comparison test

   (c) divergent by limit comparison test

   (d) divergent by divergence test

   (e) convergent by alternating series test

7. The series $\displaystyle\sum_{n=1}^{\infty} \frac{\cos^2 n}{\sqrt[3]{n^4+5}}$ is

(a) convergent by comparison test with $\displaystyle\sum_{n=1}^{\infty} \frac{1}{\sqrt[3]{n^4}}$

(b) convergent by integral test

(c) convergent by comparison test with $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n}$

(d) divergent by divergence test

(e) diverges by comparison test with $\displaystyle\sum_{n=1}^{\infty} \frac{\cos^2 n}{n^2}$

8. The series $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n \ln n}$ is

(a) convergent by integral test

(b) divergent by divergence test

(c) convergent by alternating series test

(d) divergent by limit comparison test

(e) divergent by alternating series test