Series multiple-choice practice

1 Find the sum of the series

$$2+\frac{1}{2}+\frac{1}{8}+\frac{1}{32}\ldots$$

a)15/7 b)8/3 c)3/5 d)13/6 e) DV

2 Find the sum of the series $\sum_{n=1}^{\infty}\frac{1}{n(n+2)}$.

a) 3/4 b) 1/2 c) 3/5 d) 9/10 e) DV

3. Find the sum of the series $\sum_{n=1}^{\infty}\frac{2^n}{3^{n-1}}$.

a)4/3 b)5/3 c)2 d)6 e)divergent

4 Find the sum of the series $\sum_{n=1}^{\infty}\frac{1}{\sqrt{n}}$.

a) 20/3 b)e^2 c) 3 d) 20/7 e) DV

5 If we use the integral test to show that the series $\sum_{n=1}^{\infty}\frac{1}{n(n+1)}$ converges, we obtain an improper integral with a finite value. What is that value?

a) e b) $\ln 2$ c) $\sqrt{3}$ d)$\sqrt{2}$ e) e-1

6 Which of the three series below converge?

I) $\sum_{n=1}^{\infty}\frac{1}{n}$ II) $\sum_{n=1}^{\infty}\frac{1}{n^{1.1}}$ III) $\sum_{n=1}^{\infty}\frac{1}{n^{0.9}}$

a) I, II b) I c) none d) III e) II

7. Which of the three series below converge?

I)$\sum_{n=2}^{\infty}\frac{1}{n\ln n}$ II)$\sum_{n=2}^{\infty}\frac{1}{n(\ln n)^2}$ III)$\sum_{n=2}^{\infty}\frac{1}{n(\ln n)^3}$

a)II b)I, II, III c)I, III d)II, III e)III

8. Which of the following series are convergent?

$I.\sum_{n=1}^{\infty}(-1)^{n+1}$ $II.\sum_{n=1}^{\infty}(-1)^{n+1}n$ $III.\sum_{n=1}^{\infty}\left(\frac{1+n}{n}\right)^n$

a)None b) II c) III d)I, II e)I, III

9. Let the repeating decimal 0.242424...=N

$I.\ N=\sum_{n=1}^{\infty}24\left(\frac{1}{100}\right)^n$ $II.\ N=\frac{24}{1-100^{-2}}$ $III.\ N=\frac{8}{33}$

a)I b) II c) III d)I, II e)I, III

10. Find the fourth term of the sequence $\frac{(-1)^{n+1}2^n}{3n-1}$, $n=1,2,3,4....$

a) 16/11 b) -16/11 c) -8/11 d)-16/13 e)none of these

11. Find the sum of the infinite geometric series:

$1+\frac{1}{3}+\frac{1}{9}+\frac{1}{27}+....$

a) 3/2 b) 3 c) 5/3 d)5/2 e)none of these

12. Which of the following series are convergent?

$I.\ 1+\frac{1}{2^2}+\frac{1}{3^2}+....+\frac{1}{n^2}+....$

$II.\ 1+\frac{1}{2}+\frac{1}{3}+....+\frac{1}{n}+....$

$III.\ 1-\frac{1}{3}+\frac{1}{3^2}-....+\frac{(-1)^{n+1}}{3^{n-1}}+....$

a) I b) III c) I, III d)II, III e)I, II, III

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