Tajima HS Solis AP CALC BC

UNIT 6 – Test Review PRACTICE

Name Exemplar PER____ DATE________________

1. *Show your work and circle the correct answer.*

Which of the following series are convergent?

I. $1+\frac{1}{2^2}+\frac{1}{3^2}+\cdots+\frac{1}{n^2}+\cdots$ p-series $p=2>1$ C

II. $1+\frac{1}{2}+\frac{1}{3}+\cdots+\frac{1}{n}+\cdots$ p-series $p=1$ D

III. $1-\frac{1}{3}+\frac{1}{3^2}-\cdots+\frac{(-1)^{n+1}}{3^{n-1}}+\cdots$ Alt. series ① $\lim_{n\to\infty}\frac{1}{3^{n-1}}=0$ ② $\frac{1}{3^{2-1}}>\frac{1}{3^{3-1}}$ ✓ C

A) I only
B) III only
C) I and III
D) II and III
E) I, II, and III

2. *Show your work and circle the correct answer.*

Which of the following series converge?

I. $\sum_{n=1}^{\infty}\frac{n}{n+2}$ nth term test $\lim_{n\to\infty}\frac{n}{n+2}=1$ D

II. $\sum_{n=1}^{\infty}\frac{\cos(n\pi)}{n}$ alternates C

III. $\sum_{n=1}^{\infty}\frac{1}{n}$ harmonic d

~~A) None~~
B) II only
~~C) III only~~
D) I and II
~~E) I and III~~

3. Explain your reasoning in the space provided.

For what integer k, $k>1$, will both $\sum_{n=2}^{\infty}\frac{(-1)^{kn}}{n}$ and $\sum_{n=1}^{\infty}\left(\frac{k}{4}\right)^n$ converge?

must alternate

must be less than 1.

~~A) 6~~ ~~B) 5~~ ~~C) 4~~ D) 3 E) 2

k=3 would ensure the first series alternates and converges and ensure that the ratio of the geometric series is less than 1 and also converges.

Answers are on the WEEBLY → UNIT 6 REVIEW