

AP Calculus Exam Prep Assignment #1 Name _____

Multiple Choice

- 1) $\sum_{j=0}^{40} 3(1.05)^j =$ $\sum_{n=0}^k a_n r^n = a_0 \frac{1-r^n}{1-r}$ $3\left(\frac{1-1.05^{41}}{1-1.05}\right) \approx 383.52$ **A)**
- 2) Find the sum of the geometric series $\sum_{n=1}^{\infty} 2(-.9)^n$ $\sum_{n=1}^{\infty} 2(-.9)^n = -1.8\left(\frac{1}{1-(-.9)}\right) = -\frac{18}{19}$ **D)**
- 3) Choose the series that diverges by the n^{th} -Term Test for Divergence:
- A) $\sum_{n=0}^{\infty} \frac{14}{n}$ **B)** $\sum_{n=0}^{\infty} \frac{n-6}{n}$ C) $\sum_{n=0}^{\infty} \frac{100n^{14}}{4^n}$ D) $\sum_{n=0}^{\infty} \frac{n-6}{n!}$ E) N.O.T.
- $\lim_{n \rightarrow \infty} \frac{14}{n} = 0$ $\lim_{n \rightarrow \infty} \frac{n-6}{n} = 1$ $\lim_{n \rightarrow \infty} \frac{100n^{14}}{4^n} = 0$ $\lim_{n \rightarrow \infty} \frac{n-6}{n!} = 0$
- 4) Choose the best answer. (Use the 4th partial sum): $\sum_{n=1}^{\infty} \frac{6}{n^2} = 6 + \frac{6}{4} + \frac{6}{9} + \frac{6}{16} = \frac{205}{24}$ **A)**
- 5) The series $\sum_{n=1}^{\infty} \left(-\frac{\pi}{e}\right)^n$ is:
- A) Divergent** Geometric series, $|r| > 1$.
- 6) Choose the test that could show $\sum_{n=1}^{\infty} \frac{n!}{1 \cdot 3 \cdot 5 \cdots (2n-1)}$ converges. **C) Ratio Test**
- 7) $\sum_{n=1}^{\infty} \frac{1}{1+e^{-n}}$
- E) N.O.T.**
- 8) $\lim_{n \rightarrow \infty} \left[\frac{(n+1)!}{e^{n+1}} \cdot \frac{e^n}{n!} \right] = \lim_{n \rightarrow \infty} \frac{n+1}{e} = \infty$
- C) Diverges by the Ratio Test**