

Name _____ AP Calculus BC Quiz 9.1- 9.7

1. Find all values of x for which the series converges. For these values of x , write the sum of the series as a function of x .

$$\sum_{n=0}^{\infty} 10 \left(\frac{x-3}{10} \right)^n$$

2. Consider the series $\sum_{n=1}^{\infty} \frac{1}{(6n-1)^2}$. The sum of the series is $\pi^2/7$. Find the sum of the series $\sum_{n=6}^{\infty} \frac{1}{(6n-1)^2}$.

3. Use the *Alternating Series Test* (if possible) to determine whether the series $\sum_{n=1}^{\infty} (-1)^n \frac{8n^7+5}{5n^9+2n+8}$ converges or diverges?

4. It can be shown that $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n3^n} = \ln\left(\frac{4}{3}\right)$. The partial sum $\sum_{n=1}^6 \frac{(-1)^{n+1}}{n3^n}$ approximates $\ln\left(\frac{4}{3}\right)$ with error less than how much?

5. Use the Ratio Test to determine the convergence or divergence of the

series $\sum_{n=0}^{\infty} \frac{(-1)^n 2^{7n}}{(2n+1)!}$.

Find the Maclaurin polynomial of degree 5 for the function.

6. $f(x) = \sin(4x)$

Find the Maclaurin polynomial of degree 4 for the function.

7. $f(x) = \cos(5x)$