Name: _____ **Period:** _____

Date: _____ **AP Calc BC**

Mr. Mellina/Ms. Lombardi

9.5/9.7 Quiz Review

For numbers 1 & 2: Determine the number of terms required to approximate the sum of the series with an error of less than 0.0001.

1. $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^4}$

2. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{3n^3 - 2}$

For numbers 3-6: If possible, approximate the sum of the series by using the first seven terms. Then find an upper bound for the error of the approximation. Then write an interval for which the sum of the series, S, falls within.

3. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n+1}$

4. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} n}{3n+2}$

5. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} n}{n^2+5}$

6. $\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n}}$

For numbers 7-9: Find the nth Maclaurin Polynomial for the function.

7. $f(x) = \sin x\,, n = 7$

8. $f(x) = xe^x,\ n = 4$

9. $f(x) = \frac{1}{1-x},\ n = 5$

For numbers 10-12: Find the nth Taylor Polynomial for the function, centered at *c*.

10. $f(x) = \frac{1}{x^2},\ n = 4,\ c = -2$

11. $f(x) = \sqrt{x},\ n = 2,\ c = 4$

12. $f(x) = x^2 \cos x\,,\ n = 2,\ c = \pi$

For numbers 13 & 14: Determine the degree of the Maclaurin polynomial required for the error in the approximation of the function at the indicated value of x to be less than 0.001.

13. $f(x) = \cos x,$ approximate $f(0.75)$

14. $f(x) = e^x,$ approximate $f(-0.25)$