Name: _____ **Period:** _____

Date: _____ **AP Calc BC**

Mr. Mellina/Ms. Lombardi

Chapter 9 Part 1 Review

GUIDELINES FOR TESTING A SERIES FOR CONVERGENCE OR DIVERGENCE

1. Does the nth term approach 0? If not, the series diverges.
2. Is the series one of the special types—geometric, p-series, telescoping, or alternating?
3. Can the Integral Test, the Root Test, or the Ratio Test be applied?
4. Can the series be compared favorably to one of the special types?

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

2. $\sum_{n=1}^{\infty} \left(\frac{\pi}{6}\right)^n$

3. $\sum_{n=1}^{\infty} ne^{-n^2}$

4. $\sum_{n=1}^{\infty} \frac{1}{3n+1}$

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

6. $\sum_{n=1}^{\infty} \frac{n!}{10^n}$

7. $\sum_{n=1}^{\infty} \left(\frac{n+1}{2n+1}\right)^n$

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

9. $\sum_{n=1}^{\infty} \frac{100}{n}$

10. $\sum_{n=1}^{\infty} \frac{3}{n\sqrt{n}}$

11. $\sum_{n=1}^{\infty} \left(\frac{2\pi}{3}\right)^n$

12. $\sum_{n=1}^{\infty} \frac{5n}{2n - 1}$

13. $\sum_{n=1}^{\infty} \frac{n}{2n^2 + 1}$

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

15. $\sum_{n=1}^{\infty} \frac{10}{3\sqrt{n^3}}$

16. $\sum_{n=1}^{\infty} \frac{10n + 3}{n2^n}$

17. $\sum_{n=1}^{\infty} \frac{2^n}{4n^2 - 1}$

18. $\sum_{n=1}^{\infty} \frac{\cos n}{3^n}$

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

20. $\sum_{n=1}^{\infty} \frac{n!}{n7^n}$

21. $\sum_{n=1}^{\infty} \frac{\ln n}{n^2}$

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

23. $\sum_{n=1}^{\infty} \frac{(-1)^n 3^n}{n2^n}$

24. $\sum_{n=1}^{\infty} \frac{(-3)^n}{3 \cdot 5 \cdot 7 \cdot \cdots \cdot (2n+1)}$

25. $\sum_{n=1}^{\infty} \frac{3 \cdot 5 \cdot 7 \cdot \cdots \cdot (2n+1)}{18^n (2n-1) n!}$

For more review see Pages 681-682.