REVIEW 9.1 – 9.6

Work the following on notebook paper. On problems 1 – 2, determine if the **sequence** converges or diverges. If it converges, find its limit. **Justify** your answer.

1. $a_n = \dfrac{(n+1)!}{(n-1)!}$

2. $a_n = \dfrac{\ln n}{n^3}$

Determine if the **series** converges or diverges. Tell which test you used, & **justify** your answer. You must use each test at least once.

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

8. $\displaystyle\sum_{n=1}^{\infty} \frac{5^n}{n!}$

4. $\displaystyle\sum_{n=0}^{\infty} \left(-\frac{4}{3}\right)^n$

5. $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n\sqrt[3]{n}}$

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

6. $\displaystyle\sum_{n=1}^{\infty} \frac{2n^2-5}{3n^3+4n-6}$

10. $\displaystyle\sum_{n=1}^{\infty} \left(\frac{5n+4}{3n}\right)^n$ this is root test if you want to try!

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

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

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