Math 1497 − Calculus II Spring 2022 − Homework 5

pg. 605, #46, 47, 48 and 51. Do the following converge of diverge?

46. $\displaystyle\sum_{n=0}^{\infty} \frac{6^n}{n+1}$

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

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

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

pg. 613, #3, 5, 9, 11, 13, and 15. Using the integral test, determine whether the following convergence or diverge?

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

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

9. $\displaystyle\frac{\ln 2}{2} + \frac{\ln 3}{3} + \frac{\ln 4}{4} + \frac{\ln 5}{5} +$

11. $\displaystyle\frac{1}{3} + \frac{1}{5} + \frac{1}{7} + \frac{1}{9} +$

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

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

pg. 620, #17, 18, 20, and 21.

Use the limit comparison test to determine the convergence of the following series

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

18. $\displaystyle\sum_{n=1}^{\infty} \frac{5}{4^n+1}$

20. $\displaystyle\sum_{n=1}^{\infty} \frac{2^n+1}{5^n+1}$

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

Due: Friday Feb. 25, 2022 by 4pm.