

**Math 1627 Fall 2021**  
**Project 02**

The project is due before class Monday, Oct 25. Make sure to show all your work, you may not receive full credit if the accompanying work is incomplete or incorrect.

As usual - please send me your work **on time** as a **pdf file** with the file name **beginning with your last name**; failure to do so may cause you to incur a penalty.

Problem 1. Calculate the following limit:

$$\lim_{n \rightarrow \infty} \left( \frac{3n+2}{3n+5} \right)^n.$$

Problems 2-5. Determine if the following series converge, indicate your reasoning and indicate which test you are using.

$$\begin{array}{ll} 2. \sum_{n=1}^{\infty} \frac{3 \cdot 7 \cdot 11 \cdot \dots \cdot (4n-1)}{n!2^n} & 3. \sum_{n=1}^{\infty} \frac{(2n)!n^n}{(3n)!} \\ 4. \sum_{n=1}^{\infty} \frac{1}{\ln n + \sqrt{n}} & 5. \sum_{n=2}^{\infty} \frac{\sqrt{n^3 - 3n}}{3n^3 - 5n^2 + 3} \end{array}$$

Problems 6-8. Do the following problems from the textbook section 11.6 pages 743-744, numbers 44, 46, and 48.