# Quiz #10, 4/6
## Math 157 (Calculus II), Spring 2023

Problem 1 is worth 5 points (2.5 pts each part), and Problem 2 is worth 5 points (2.5 pts each part), for a total of 10 points. Remember to *show your work* on all problems!

1. Consider the series $s = \sum_{n=1}^{\infty} \frac{1}{n^3}$. Let $s_n = \sum_{k=1}^{n} \frac{1}{k^3}$ be the $n$th partial sum for this series.

   (a) Compute $s_2$, the second partial sum, as an estimate for the true value $s$ of the series.

   (b) Let $R_2 = s - s_2$ denote the error of your estimate. Compute bounds on this error using integrals. **Hint**: recall that $\int_{n+1}^{\infty} f(x)\, dx \le R_n \le \int_{n}^{\infty} f(x)\, dx$ for the appropriate $f(x)$.

2. For the following series, decide whether they converge or diverge. Do this by using a comparison (either direct or limit) to a series whose convergence/divergence we showed in class.

   (a) $\sum_{n=1}^{\infty} \frac{2}{2n-1}$

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