

Quiz #9, 3/30  
Math 157 (Calculus II), Spring 2023

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

1. For each of the following sequence limits, compute the limit or explain why it does not exist.

(a)  $\lim_{n \rightarrow \infty} \frac{3n^2 + 4}{2n^2 + 5n + 1}$

(b)  $\lim_{n \rightarrow \infty} \sin\left(\frac{\pi}{2} + \frac{\pi}{n}\right)$

2. For each of the following sequences  $a_n$ , state whether it is: (i) increasing, decreasing, or neither; (ii) bounded, or unbounded; (iii) convergent or divergent.

(a)  $a_n = n^2$

(b)  $a_n = (-1)^n \cdot n^2$

(c)  $a_n = \frac{1}{n}$

(d)  $a_n = \frac{(-1)^n}{n}$

(e)  $a_n = (-1)^n$