

Name: _____

Math 1152Q: Fall '17
Week 3 Quiz Extra HW

1. (Extra HW for question 1)

(Sec 11.1 Def 5 page 697) Let $\{b_n\}$ be a sequence. What does it mean to write $\lim_{n \rightarrow \infty} b_n = \infty$? Use Def 5, with M and N . Warning: do not include variations of the words “converge”, “diverge”, “approach”, “increase”, “continuously”, or “infinity” in your answer.

2. (Extra HW for question 2) SEE EXAMPLE https://egunawan.github.io/fall17/notes/notes11_1choosingN.pdf and <https://egunawan.github.io/fall17/hw/problemsAkey.pdf>

Let ϵ be a positive number.

(a) The sequence $a_n = (2n + 4)/(5n - 8)$ converges to $2/5$. Choose N so that $|2/5 - a_n| < \epsilon$ whenever $n > N$.

(b) The sequence $a_n = (n^2 + 1)/(7n^2 + 5)$ converges to $1/7$. Find N so that $|1/7 - a_n| < \epsilon$ as long as $n > N$.

(c) The sequence $a_n = a_n = (n^2 + 2)/(4n^2 - 1)$ converges to $1/4$. Find N so that, if $n > N$, then $|1/4 - a_n| < \epsilon$.

3. (Extra HW for question 3)

(a) Express the partial sum S_n as a telescoping sum.

(b) Compute $\lim_{n \rightarrow \infty} S_n$.

(c) Determine whether each series is convergent or divergent by part (b).

1.

$$\sum_{n=2}^{\infty} \frac{10}{n^2 - 1}.$$

2.

$$\sum_{k=1}^{\infty} \sqrt{k} - \sqrt{k+3}.$$