

Math 116 — Series Worksheet

Winter 2016

1. Determine whether the following series converge or diverge using the techniques you have learned in class.

(a) $\sum_{n=1}^{\infty} \frac{n^2 + \sin(n)}{n^3 + 3}$

(b) $\sum_{n=0}^{\infty} \frac{n!}{e^n}$

(c) $\sum_{n=4}^{\infty} \frac{1}{n(\ln(n))^2}$

(d) $\sum_{n=0}^{\infty} \frac{1}{e^{n!}}$

(e) $\sum_{n=1}^{\infty} \sin(n)$

(f) $\sum_{n=1}^{\infty} \tan(n)$

(g) $\sum_{n=0}^{\infty} \frac{(-1)^n}{6^n}$

(h) $\sum_{n=1}^{\infty} \frac{e^{n^2}}{n^3}$

(i) $\sum_{n=0}^{\infty} \frac{1}{n^3 + 7}$

(j) $\sum_{n=1}^{\infty} \cos(\pi n) \ln\left(1 + \frac{1}{n}\right)$

(k) $\sum_{n=1}^{\infty} \sin(1/n)$

(l) $\sum_{n=1}^{\infty} \cos(1/n)$

(m) $\sum_{n=1}^{\infty} \sin(e^{-n})$

(n) $\sum_{n=1}^{\infty} (-1)^n e^{1/n}$

(o) $\sum_{n=4}^{\infty} \frac{1}{(\ln(n))^{\ln(n)}}$

(p) $\sum_{n=2}^{\infty} \frac{1}{n^3 + n^2 \cos(n)}$

(q) $\sum_{n=0}^{\infty} \frac{e^{n^2}}{n!}$

(r) $\sum_{n=2}^{\infty} \frac{n}{(\ln(n))^3}$

(s) $\sum_{n=1}^{\infty} (-1)^n \sin(1/n)$

(t) $\sum_{n=0}^{\infty} \frac{9^n}{8^n + 10^n}$