

Math 16C
Kouba
Worksheet 11

1.) List the first 5 terms (starting with $n = 1$) of each sequence. Determine the limit of each sequence or state that the limit does not exist.

a.) $a_n = \cos(n\pi)$

e.) $a_n = \sin(\pi/n)$

b.) $a_n = \frac{\cos(n\pi)}{n}$

f.) $a_n = n \cdot \sin(1/n)$

c.) $a_n = n \cdot \cos(n\pi)$

g.) $a_n = \tan((\pi/4) + n(\pi/2))$

d.) $a_n = \sin(n\pi)$

2.) Determine if each series converges or diverges. Briefly explain and name the test that you are using.

a.) $\sum_{n=1}^{\infty} \cos(n\pi)$

d.) $\sum_{n=1}^{\infty} \frac{n^n}{n!}$

b.) $\sum_{n=1}^{\infty} \sin((\pi/2) + (1/n))$

e.) $\sum_{n=1}^{\infty} \frac{1 - \cos(n\pi)}{n^2}$

c.) $\sum_{n=1}^{\infty} \frac{\tan((4n+1)(\pi/4))}{n^3}$

3.) Determine the degree n of the Taylor polynomial $p_n(x)$ centered at $c = 0$ that will estimate the value of the function $f(x) = \ln(1-x)$ with absolute error at most 0.001 on the interval $[-1/2, 0]$.