University of Nevada, Reno —— MATH182 (Calculus 2)
Midterm 2 Sample test. Spring 2019

Instructor: He Wang   **Name:** _____

To receive full credit for a problem you must show all necessary work.

1. Determine whether the series converges or diverges. If it converges, find the sum.

$$2 - \frac{2}{3} + \frac{2}{9} - \frac{2}{27} + \frac{2}{81} - \frac{2}{243} + \cdots$$

2. Determine whether the series $\sum_{n=1}^{\infty} \frac{2+7^n}{\pi+3^n}$ converges.

3. Determine whether the series $\displaystyle\sum_{n=1}^{\infty} (-1)^n \frac{2}{\sqrt{3n-1}}$ converges.

4. Determine whether the series $\displaystyle\sum_{n=0}^{\infty} \frac{10^n}{n!}$ converges.

5. Find the radius of convergence and interval of convergence of the series $\sum_{n=0}^{\infty} \frac{x^n}{n2^n}$.

6. Find a power series representation for the function $f(x) = \dfrac{x}{(2-x)^2}$ and determine the interval of convergence.

7. Find the sum $\displaystyle\sum_{n=0}^{\infty}(-1)^n\frac{(\pi/3)^{2n}}{(2n)!}$

8. (Multi-choice) Determine whether the series is convergent or divergent.

(1.) $\displaystyle\sum_{n=1}^{\infty}\frac{\sin n}{n^2}$ (A) absolutely convergent.   (B) conditionally convergent.   (C) divergent.

(2.) $\displaystyle\sum_{n=1}^{\infty}\frac{1000}{\sqrt{n^2+1}}$

(A) absolutely convergent.   (B) conditionally convergent.   (C) divergent.

(3.) $\displaystyle\sum_{n=1}^{\infty}(-1)^n\frac{1000}{\sqrt{n^2+1}}$

(A) absolutely convergent.   (B) conditionally convergent.   (C) divergent.

(4.) $\displaystyle\sum_{n=1}^{\infty}(-1)^n\cos\left(\frac{1}{n^2}\right)$

(A) absolutely convergent.   (B) conditionally convergent.   (C) divergent.