

Name: _____

Please show all work and justify your answers. Supply brief narration with your solutions and draw conclusions.

1. Evaluate the following infinite sums

$$(a) 0.6 + 0.36 + 0.216 + 0.1296 + 0.07776 + \dots \quad (b) \sum_{n=2}^{\infty} \frac{1}{n^2 - 1}$$

2. Determine whether the following series converge

$$(a) \frac{1}{2 \ln 2} + \frac{1}{3 \ln 3} + \frac{1}{4 \ln 4} + \dots \quad (b) \sum_{n=1}^{\infty} \frac{5 + 2n}{(1 + n^2)^2}$$

3. Find a power series representation for $\frac{1}{4 + x^2}$ and determine its interval of convergence.

4. Find two unit vectors in the plane whose angle with $u = [5, 4]$ is $\pi/6$. Sketch.

5. Given three points $A = [0, -2, 0]$, $B = [4, 1, -2]$, and $C = [5, 3, 1]$ find the area of the triangle having these points as vertices. Also find a unit vector perpendicular to the plane containing these points. Sketch.

1	2	3	4	5	total (50)	%

Prelim. course grade: %