Assignment 5

1. Determine the convergence or divergence of the sequence with the given nth term . If the sequence converges , find its limit.

$$a_n = \frac{\sin \sqrt{n}}{\sqrt{n}}$$

2. Determine the convergence or divergence of the series.

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

(b) $\displaystyle\sum_{n=2}^{\infty} \frac{(-1)^n n}{n^2 - 3}$

(c) $\displaystyle\sum_{n=1}^{\infty} \frac{1 \cdot 3 \cdot 5 \cdots (2n-1)}{2 \cdot 4 \cdot 6 \cdots (2n)}$

(d) $\displaystyle\sum_{n=1}^{\infty} \frac{n}{e^{n^2}}$

3. Find the interval of convergence of the power series.

$$\sum_{n=1}^{\infty} \frac{4^n (x-1)^n}{n}$$

4. Convert the rectangular equation to polar form and sketch its graph.

$$(x^2 + y^2)^2 - 9(x^2 - y^2) = 0$$