Homework/ Interval and Radius of Convergence of the Power Series

1- Find the interval of convergence of the power series :

$$\sum_{n=1}^{\infty} \frac{(-1)^n}{3^n}(x+1)^n$$

2- Find the interval of convergence of the power series:

$$\sum_{n=1}^{\infty} \frac{2^n(x-5)^n}{n^2}$$

3- Find the interval and radius of convergence of the power series:

$$\sum_{n=1}^{\infty} (-1)^n \frac{(x+4)^n}{n6^n}$$

4- Find the interval and radius of convergence of the power series:

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

5- Find the interval and radius of convergence of the power series:

$$\sum_{n=1}^{\infty} (-1)^{n+1} \frac{(x^2)^n}{n}$$

6- Find the interval and radius of convergence of the power series:

$$\sum_{n=1}^{\infty} \frac{(-1)^n (x-1)^{2n+1}}{2n+1}$$

7-Find the interval and radius of convergence of the power series:

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

8- Find the interval and radius of convergence of the power series:

$$\sum_{n=1}^{\infty} \frac{5^n x^n}{n^2+1}$$

9- - Find the interval and radius of convergence of the power series:

$$\sum_{n=1}^{\infty} \frac{n(x-3)^n}{n!}$$

10- - Find the interval and radius of convergence of the power series:

$$\sum_{n=1}^{\infty} \frac{(-1)^n (x-1)^n}{5^n \sqrt{n}}$$