

Power Series- HW Problems

Find the radius of convergence and the interval of convergence for the following series.

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

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

3.
$$\sum_{n=1}^{\infty} \frac{x^n}{n!}$$

4.
$$\sum_{n=1}^{\infty} \frac{x^n}{n^2(3^{(n+1)})}$$

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

6.
$$\sum_{n=1}^{\infty} \frac{1}{n^3+1} (x + 3)^n$$

7.
$$\sum_{n=1}^{\infty} \frac{n^2}{5^n} (x - 2)^n$$

8.
$$\sum_{n=1}^{\infty} \frac{(-1)^n}{3n+1} (x + 1)^{(2n-1)}$$