1.(a) Find the series' radius and the interval of convergence; (b)Find what values of x does the series converge absolutely; (c)Find what values of x does the series converge conditionally. (8 points)

(1) $\sum_{n=0}^{\infty} \frac{3^n x^n}{n!}$ (4 points)

(2) $\sum_{n=2}^{\infty} \frac{x^n}{n(\ln n)^2}$ (4 points)

2.Find the Taylor series at x=a of the following functions. (7 points)

(1) $f(x) = \frac{1}{x}, \quad a = 3$ (4 points)

(2) $f(x) = \ln(1 + x^2), \quad a = 0$ (3 points)