8. [14 points] Consider the following power series

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

a. [11 points] For what values of x does the power series converge?

b. [2 points] For what values of x does the power series converges absolutely?

c. [1 point] For what values of x does the power series converges conditionally?