Power Series (Test Review Part 1)

Written in the form: $\sum_{n=0}^{\infty} c_n(x - x_o)^n$

c_n are the coefficients
and x_o is the center

1. Find Radius and Interval of Convergence
   Why will it be absolutely convergent?
   What tests will be used to find this?
   -
   -
   -
2. Check endpoints (They can be ____, ____, or ____)
3. Draw Picture

Helpful Hints- Remember the Algebraic operations

Examples:

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

What is the center?
What is the interval of convergence for this Power Series? (what test did you use)
Draw a picture to represent its behavior.

2.
$$\sum_{n=1}^{\infty} \frac{2^n}{n}(4x - 8)^n$$

What is the center?
What is the interval of convergence for this Power Series? (what test did you use)
Draw a picture to represent its behavior.

4.   Find a power series representation of $f(x) = \frac{x}{4+x^2}$
      State the LARGEST interval for which it is valid. (what test did you use)

5.   Find a power series representation of $f(x) = \int_0^b \frac{1}{1+x^5}$
      State the values of b it is valid for.

6. Consider the formal power series.

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

What is the center?
What is the interval of convergence for this Power Series? (what test did you use)
Draw a picture to represent its behavior.