11. [12 points]

a. [7 points] Determine the **radius** of convergence for the following power series. Show all of your work. You do not need to find the interval of convergence.

$$\sum_{n=1}^{\infty} \frac{(2n)!}{10^n (n!)(n+1)!} x^{2n}$$

Answer: ____________________

b. [5 points] No justification is needed for the remainder of this problem. Suppose that the following is true about the sequence C_n which is defined for $n \geq 0$:

- C_n is a monotone decreasing sequence of positive numbers which converges to 0.
- $\lim_{n\to\infty} \frac{C_n}{1/n} = 28$.
- The power series $\sum_{n=0}^{\infty} \frac{C_n}{4^n}(x-16)^n$ has radius of convergence 4.

What is the center of the interval of convergence of $\sum_{n=0}^{\infty} \frac{C_n}{4^n}(x-16)^n$?

Answer: ____________________

What are the endpoints of the interval of convergence of $\sum_{n=0}^{\infty} \frac{C_n}{4^n}(x-16)^n$?

Answer: Left endpoint at $c =$ ____________________

Right endpoint at $d =$ ____________________

Let c and d be the left and right endpoints of the interval of convergence you found above. Which of the following could be the interval of convergence of $\sum_{n=0}^{\infty} \frac{C_n}{4^n}(x-16)^n$? Circle **all** correct answers.

(c, d) $\qquad$ $(c, d]$ $\qquad$ $[c, d)$ $\qquad$ $[c, d]$