9. [12 points] For each of parts **a** through **c** below, determine the radius of convergence of the power series. Show your work carefully.

a. [3 points] $\displaystyle\sum_{n=1}^{\infty} \frac{e}{n!}(x-1)^n$

Answer: radius of convergence = _____

b. [3 points] $5(x+\pi) + 5\cdot 4(x+\pi)^2 + 5\cdot 9(x+\pi)^3 + 5\cdot 16(x+\pi)^4 + \cdots$

Answer: radius of convergence = _____

c. [3 points] $\displaystyle\sum_{n=0}^{\infty} \frac{\pi}{8^n}(x+2)^{3n}$

Answer: radius of convergence = _____

d. [3 points] Consider the power series $\sum_{j=0}^{\infty} C_j(x-5)^j$, where each C_j is a constant. Suppose this power series

- converges when $x = 2$ and
- diverges when $x = 12$.

Based on this information, which of the following values **could** be equal to the radius of convergence of the power series? Circle all possibilities from the list below.

0	1	2	3	4
5	6	7	8	9
10	11	12	NONE OF THESE	