12. [8 points] Suppose that the power series \( \sum_{n=0}^{\infty} a_n(x - 4)^n \) converges when \( x = 0 \) and diverges when \( x = 9 \). In this problem, you do not need to show your work.

a. [4 points] Which of the following could be the interval of convergence? Circle all that apply.

\[ [0, 8] \quad [0, 7] \quad (-1, 9) \quad (-2, 10) \quad (0, 8) \]

b. [2 points] The limit of the sequence \( a_n \) is 0.

ALWAYS \hspace{2cm} SOMETIMES \hspace{2cm} NEVER

.....

c. [2 points] The series \( \sum_{n=0}^{\infty} (-5)^n a_n \) converges.

ALWAYS \hspace{2cm} SOMETIMES \hspace{2cm} NEVER