M12 Concept Question 1

For the pin-ended, end-loaded, rod shown on the board, what are the most useful boundary conditions in order to solve for the buckling load?

1. \( x_1 = 0 : \quad w = 0, \quad \frac{d^2w}{dx^2} = 0 \)

2. \( x_1 = L : \quad w = 0, \quad \frac{d^2w}{dx^2} = 0 \)

3. \( x = 0 : \quad w = 0, \quad \frac{dw}{dx} = 0 \)

4. \( x = 0 : \quad w = 0, \quad x = \frac{L}{2} : \quad \frac{dw}{dx} = 0 \)

5. \( x = 0 : w = 0, \quad x = \frac{L}{2} : \quad \frac{dw}{dx} = 0, \quad x = L : w = 0 \)

6. Some other answer

7. I do not know/I do not understand.