Problem Definition

Problem 19. Find the absolute extrema of the function on the given closed interval. 

\[ f(x) = 2(3 - x) \quad [-1,2] \]

Solution Step 1:

We start by computing the derivative of the function to find any critical points on the open interval \((-1,2)\).

\[ f'(x) = -2 \]

Since this values is never zero and there are no discontinuities in the interval we do not have any critical points for this function.

Solution Step 2:

To compute the absolute minimum and maximum values for a continuous function on a closed interval we just need to evaluate the function at the critical points and the endpoints. This gives the following list of values.

left end point, \( x = -1 \) \quad \( f(-1) = 8 \) absolute maximum  
right end point, \( x = 2 \) \quad \( f(2) = 2 \) absolute minimum