1 7.5: Average Value of a Function

Goal: To find the average value of a function \( f \) on a given interval \([a, b]\).

Average of \( n \) values:

Derivation of formula for average value of a function:

Geometric Interpretation:
Examples: Find the average value of \( f(x) = x^3 \) from \( x = 2 \) to \( x = 4 \).

The electric current in a household power supply is an alternating current modeled by \( i(t) = I \sin \omega t \).

a) Show that the average value of \( i \) over one period is 0.

b) The root mean square (rms) current is the square root of the average value of \( i^2 \) over one period. Calculate the rms current.