

1. Estimate the area under the curve $f(x) = 1 + x^2$ from $x = 0$ to $x = 8$ by using Four Rectangles and the Mid-Point Rule.

2. A particle moves along a line so that its velocity at time t is

$$v(t) = (t^2 - t - 6) \text{ m/sec.}$$

- Find the distance traveled during the period $0 \leq t \leq 4$.

1. Evaluate the integral $\int_0^1 (3x + 2\sqrt{1-x^2}) dx$ by interpreting it in terms of areas.

2. Evaluate

$$\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{i=1}^n \left[\frac{2i}{n} + \left(\frac{i}{n} \right)^2 \right].$$

1. Determine the region where the area is equal to the given limit:

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \left[-1 + \left(\frac{4i}{n} \right)^2 \right] \frac{i}{n}.$$

(Do not solve the limit)

2. Find $G''(1)$ when $G(x) = \int_{x^2}^0 \frac{2dt}{1+t}$