1. Express the limits as definite integrals.

\[
\lim_{\|P\|\to 0} \sum_{k=1}^{n} (\sec c_k) \Delta x_k, \quad \text{where } P \text{ is a partition of } [-\pi/4, 0].
\]

Answer:

2. Suppose that \( f \) and \( g \) are integrable and that

\[
\int_{1}^{2} f(x)\,dx = -4, \quad \int_{1}^{5} f(x)\,dx = 6, \quad \int_{1}^{5} g(x)\,dx = 8.
\]

Find the following values.

(a) \( \int_{2}^{5} f(x)\,dx. \)

(b) \( \int_{1}^{5} (f(x) - g(x))\,dx. \)

(c) \( \int_{1}^{5} (4f(x) - g(x))\,dx. \)

Answer:

(a)
3. Graph the integrands and use areas to evaluate the integrals.

\[ \int_{-3}^{3} \sqrt{9-x^2} \, dx. \]

Answer:

4. Evaluate the integrals.

(a) \[ \int_{0}^{2} (2t - 3) \, dt. \]

(b) \[ \int_{0}^{2} (3x^2 + x - 5) \, dx. \]

Answer:

(a)
5. Use a definite integral to find the area of the region between the curve $y = 3x^2$ and the $x$-axis over the interval $[0, b]$.

Answer: