

(1) Integrate

(a) $\int \frac{1}{x^2} dx$

(b) $\int \frac{2x}{x^2} dx$

(c) $\int 3x^2 e^{x^3} dx$

(2) Compute by Riemann sums, with $n = \frac{1}{2}$, using midpoints:

(a) $\int_1^2 4e^{-2x} dx$

(b) $\int_{-1}^1 \left(\frac{8}{5e^{5x}} + \sqrt{x} \right) dx$

(3) Compute the definite integral:

(a) $\int_1^2 4e^{-2x} dx$

(b) $\int_{-1}^1 \left(\frac{8}{5e^{5x}} + \sqrt{x} \right) dx$

(4) Find $\int_0^2 |x^5 - x^3| dx$

(5) Find the area of the region bounded by the curves $y = x^2$ and $y = x^4$ by Riemann sums with $n = \frac{1}{4}$ with right endpoints, with left endpoints.

(6) Find the area of the region bounded by the curves $y = x^2$ and $y = x^4$ using definite integration.