

1. Find an estimate of the area under the graph of $y = \frac{1}{x}$ from $x = 2$ to $x = 6$ using $n=4$ with the right endpoints rule.

2. If $f(x) = \begin{cases} |x-1| & \text{if } 0 \leq x \leq 2 \\ \sqrt{9-(x-5)^2} & \text{if } 2 < x \leq 8 \end{cases}$, find the value of $\int_0^8 f(x) dx$.

3. Use the definition of the integral to evaluate the integral

$$\int_{-2}^0 (x^2 - x) dx$$