

Simpson's Rule Worksheet

Solve the following equations.

1. Using four intervals find an approximate value for $\int_0^{\pi} \sin x \, dx$ to five decimal places. 2.00456

2. Using six intervals find an approximate value for $\int_0^{12} \frac{1}{1+x^2} \, dx$ to six decimal places. 1.402017

3. (a) Find the exact value of $\int_2^6 \frac{1}{\sqrt{x}} \, dx$. $2(\sqrt{6} - \sqrt{2})$

(b) Using four intervals using Simpson's Rule, find an approximate value for $\int_2^6 \frac{1}{\sqrt{x}} \, dx$ to four decimal places. 2.0712

(c) Find the percentage error in the Simpson's Rule estimate to the true value. 0.0314%