1 Evaluate $\int_0^1 \cos x^2 dx$ by taking eight subintervals using trapezoidal rule.

2 Use trapezoidal rule to evaluate $\int_0^1 x^3 dx$, corresponding five subintervals.

3 Compute the following integral numerically using the trapezoidal rule:

$$I = \int_0^1 e^x dx$$

Use (*a*) $n = 1$, (*b*) $n = 2$, (*c*) $n = k$ and (*d*) $n = 8$. The exact value of $I = 1.7183$. Compare your computed results in each case with the exact result.

4 Evaluate $\int_0^1 \frac{dx}{1+x^2}$ using trapezoidal rule. Take $h = 0.25$.

5 Determine the area bounded by the curve $f(x) = xe^{2x}$ and the x-axis between $x = 0$ and $x = 1$ using the trapezoidal rule with an interval size of (*a*) $h = 0.5$, (*b*) $h = 0.1$. Determine the relative error in each case given that the exact value of the integral $I = 2.09726$.

6 Evaluate $\int_1^5 \log_{10} x \, dx$, taking eight subintervals correct to four decimal places by trapezoidal rule.

7 Evaluate $\int_1^7 \sin x^2 \, dx$ by taking seven ordinates using the trapezoidal rule.

8 Evaluate $\int_0^\pi t \sin t \, dt$ using trapezoidal rule.

9 Repeat Problem P7.9 using Simpson's 1/3 rule.

10 Repeat Problem P7.2 using Simpson's 1/3 rule taking $h = 0.25$.

11 Compute the integral $I = \int_0^1 e^x dx$ using Simpson's rule with $n = 8$ intervals rounding off the results to 4 digits.

12 Evaluate $\int_0^{0.6} e^x dx$, taking $n = 6$, correct to five significant figures by Simpson's 1/3 rule.

13 Evaluate $\int_0^{\pi/2} \sqrt{\cos x} \, dx$ by Simpson's 1/3 rule taking $n = 6$.

14 Evaluate $\int_4^{5.2} \log x \, dx$ by taking seven grid points and using the Simpson's 1/3 rule.

15 Repeat Problem P7.15 using Simpson's 1/3 rule.

16 Evaluate $\int_0^1 \frac{dx}{1+x^2}$ by taking six equal parts using Simpson's 1/3 rule.

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19 Evaluate $\int_0^1 \frac{1}{1+x^2}\,dx$, by taking seven ordinates, using the Simpson's 3/8 rule.

20 Evaluate $\int_0^1 \sqrt{\sin x + \cos x}\,dx$ correct to two decimal places using Simpson's 3/8 rule.

21 Evaluate $\int_2^6 \frac{1}{\log e^x}\,dx$ by using Simpson's 3/8 rule.

22 Evaluate $\int_4^{5.2} \log x\,dx$ by taking seven grid points. Use Simpson's 3/8 rule.

23 Evaluate $\int_0^{\pi/2} e^{\sin x}\,dx$ correct to four decimal places using Simpson's 3/8 rule.

Dr. Sherif Adham Mohamed
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