## **Solution 21.6**

Analytical solution:

$$\int_0^3 x^2 e^x \ dx = \left[ (x^2 - 2x + 2)e^x \right]_0^3 = 98.42768$$

Trapezoidal rule (n = 4):

$$I = (3-0)\frac{0+2(1.190813+10.0838+48.03166)+180.7698}{8} = 112.2684 \qquad \varepsilon_t = 14.062\%$$

Simpson's rule (n = 4):

$$I = (3-0)\frac{0+4(1.190813+48.03166)+2(10.0838)+180.7698}{12} = 99.45683 \qquad \varepsilon_t = 1.046\%$$

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