**Problem statement** Suppose \( f \) is defined by \( f(x) = 3e^{\cos x} \). Maple produced graphs of \( f \) and its first four derivatives on the interval \([2, 7]\) (be careful when examining the derivative graphs – look carefully at the vertical scales!). The graph of \( f \) is to the right, and the graphs of the first four derivatives of \( f \) are on the back of this page. You should assume that the graphs are correct for this problem.

Suppose \( I \) is the value of \( \int_{2}^{7} f(x) \, dx \).

a) Use the graph of \( f \) alone to estimate \( I \).

b) Use the information in the graphs to tell how many subdivisions \( N \) are needed so that the Trapezoid Rule approximation \( T_N \) will approximate \( I \) with error \( < 10^{-5} \).

c) Use the information in the graphs to tell how many subdivisions \( N \) are needed so that the Simpson’s Rule approximation \( S_N \) will approximate \( I \) with error \( < 10^{-5} \).