1. Consider \( g(x) = \sin(2\pi x) - 2\cos(4\pi x) \).

   (a) Find the Bernstein polynomials for \( g \) of orders \( n = 2, 3, \) and \( 4 \).

   (b) Use a graphing utility to plot \( g \) and \( B_n \) on the same axes, for \( n = 2, 3, \) and \( 4 \). Comment on the accuracy of the approximations.

   (c) How large should \( n \) be so that \( B_n(x) \) offers a “reasonably good” approximation of \( g(x) \) in this case. Support your answer with graphs, and discuss.