Problem statement In this problem, \( f(x) = \frac{1}{1 + x} - \cos x \).

a) Graph \( f(x) \) in the window \( 0 \leq x \leq 6 \) and \(-1 \leq y \leq 1.5\).

b) Write an equation showing how \( x_n \), an approximation for a root of \( f(x) = 0 \), is changed to an improved approximation, \( x_{n+1} \), using Newton’s method. Your equation should use the specific function in this problem.

c) Suppose \( x_0 = 2 \). Compute the next two approximations \( x_1 \) and \( x_2 \). Explain what happens to the sequence of approximations \( \{x_n\} \) as \( n \) gets large. You should use both numerical and graphical evidence to support your assertion.

d) Suppose \( x_0 = 4 \). Compute the next two approximations \( x_1 \) and \( x_2 \). Explain what happens to the sequence of approximations \( \{x_n\} \) as \( n \) gets large. You should use both numerical and graphical evidence to support your assertion.