NAME: Answers

1. Consider \( f(t) = \sin(20t) \) for \( t \in [0, 2\pi] \).
   
   What is a good sampling range to make a plot of \( f \) for \( t \in [0, 2\pi] \)? Justify.
   
   For general \( n \), give a good range for \( t \) to plot \( \sin(nt) \) over \([0, 2\pi]\).

   **Answers:**
   
   We first plot an ordinary \( \sin(t) \) over \([0, 2\pi]\) and then multiply the number of samples for \( \sin(20t) \) by 20.

   
   \[
   t = 0:1/5:2*\pi
   y = \sin(t); \text{plot}(t,y)
   t = 0:1/100:2*\pi
   y = \sin(20*t); \text{plot}(t,y)
   \]

   In general: take \( 0:1/(5*n):2*\pi \) as sampling range.

2. Give all commands to create a sparse 100-by-50 matrix \( A \) for which \( \text{spy}(A) \) shows

   **Answers:**

   \[
   \text{rows} = 1:100
   \text{cols} = [50:-1:1 1:50]
   \text{data} = \text{ones}(1,100)
   A = \text{sparse(rows,cols,data)}
   \]

**Alternative:** Bring to class on Monday the answers to assignment 2 of MATLAB Lecture 6; assignments 3 and 5 of Lecture 7; assignments 1 and 3 of Lecture 8.