Math 105 - Quiz 1 - September 11, 2006

Instructions: Show all of your work and circle your final answers. Calculators are allowed, but notes and books are not.

1. (10 pts.) Consider the function \( f(x) = 10 - \sqrt{x} \).
   \( f(x) \)
   (a) Find the domain of \( f(x) \).
   (b) Is 3 in the range of \( f \)? Explain.

   a) \( x \) cannot take negative values of \( x \) as input.
      So the domain is all \( x \geq 0 \), ie \([0, \infty)\).

   b) 3 is in the range if \( f(x) = 3 \) for some value of \( x \).

      \[
      \begin{align*}
      10 - \sqrt{x} &= 3 \\
      10 &= 3 + \sqrt{x} \\
      7 &= \sqrt{x} \\
      49 &= x \\
      \Rightarrow f(49) &= 10 - \sqrt{49} = 10 - 7 = 3.
      \end{align*}
      
      So 3 is in the range of \( f \).

2. (10 pts.) The graph of \( y = g(x) \) is given.
   (a) Is \( g(x) \) an even function, an odd function, or neither? Explain.
      The graph has neither symmetry through the \( y \)-axis nor through the origin. So it is neither odd nor even. (Also, note \( g(4) = 0 \) and \( g(-4) = -3 \).)
   (b) Draw the graph of \( y = g(x - 2) \).
      \( g(-4) = -3 \).
   (c) Draw the graph of \( y = g(-x) \).

\[ \begin{align*}
   y &= g(x - 2) \\
   y &= g(-x)
\end{align*} \]