Fall 2012 MATLAB Assignment 7

Work the following problems (NOTE: these are RELATED TO the corresponding page and problem number from Gilat. Do NOT work the problems from the actual Lab Manual, or you will receive NO CREDIT!)

1. **g341x01**: The position of a moving particle as a function of time is given by $x = (1 + 0.1t)\cos t$, $y = (1 + 0.1t)\sin t$, $z = 0.2\sqrt{t}$. Plot the position of the particle for $0 \leq t \leq 30$.

2. **g342x04**: Make a 3-D surface plot and 3-D contour plot of the function $z = 4\sqrt{\frac{x^2}{2} + \frac{y^2}{2} + 1}$ in the domain $-2 \leq x \leq 2$ and $-2 \leq y \leq 2$.

3. **g342x09**: An antisymmetric cross-ply composite laminate has two layers in which the fibers are aligned perpendicular to one another. A laminate of this type will deform into a saddle shape due to residual thermal stresses as described by the equation $w = k(x^2 - y^2)$ where x and y are the in-plane coordinates, w is the out-of-plane deflection, and k is the curvature (a complicated function of material properties and geometry). Make a surface plot showing the deflection of a six-inch square plate ($-3 \leq x \leq 3$ in., $-3 \leq y \leq 3$ in.), assuming $k = 0.01$ in^{-1}.

4. **g344x13**: Work the problem listed in the Gilat text.