Summer 2014 MATLAB Assignment 7

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

1. **g341x02** (plot curves in 3-D: pp323-324):
   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 $0 \le t \le 30$.

2. **g342x07** (plot surfaces in 3-D: pp324-329):
   Make a 3-D surface plot of the function $z = \cos(xy)\cos(\sqrt{x^2 + y^2})$ in the domain $-\pi \le x \le \pi$ and $-\pi \le y \le \pi$.

3. **g343x10** (plot surfaces in 3-D: pp324-329):
   The heat index is a measure of how the temperature actually feels when the effect of relative humidity is added. One formula that is used for calculating the heat index is (www.noaa.gov):
   $HI = -42.379 + 2.04901523T + 10.14333127R_H + 1.22874 \times 10^{-3}T^2R_H + 8.5282 \times 10^{-4}TR_H^2 - 1.99 \times 10^{-6}T^2R_H^2$ where HI is the heat index, T is the temperature in degrees F, and R_H is the relative humidity (%). Make a 3-D plot of HI as a function of T and R_H for $80°F \le T \le 105°F$ and $30 \le R_H \le 90\%$.

4. **g344x14** (plot surfaces in 3-D: pp324-329):
   For this one, work the actual problem from the Lab Manual.