MATH.2720   Introduction to Programming with MATLAB
Homework on Two-Dimensional Plots (Part 2) and Three-Dimensional Plots (Due 2/22)

Please email me a script file containing the commands you used to answer these questions.

1. Plot the function $f(x) = \cos(x)$ for $-2\pi \leq x \leq 2\pi$ and mark the points $(0, 1)$, and $(\pi, -1)$ with circles.

2. Add symmetric error bars to the graph you just generated using error bars of half-width 0.2 and 0.3 for the two points.

3. Download the script file `temp_data.m` from the *Class Handouts* page on our course web site and run the file. This will generate a 181×1 array named `Temp`. Generate a histogram with 11 bins for the data in this array. Label the horizontal axis `Temperature (F)` and label the vertical axis `Number of Days`.

   (This file contains the daily high temperature at UMass Lowell for the dates January 1, 2014, through June 30, 2014. The data come from Dr. Colby in the EEAS Department.)

4. Plot the curve given by the parametric equations
   $x = (1 + t^2)\sin(20t)$, $y = (1 + t^2)\cos(20t)$, $z = t$ for $-5 \leq t \leq 5$.
   Be sure enough points so the curve looks smooth.

5. Graph the surface given by $z = x^2 - y^2$ for $-3 \leq x \leq 3$, $-3 \leq y \leq 3$.

6. Graph the surface given by the parametric equations
   $x = r\cos(\theta)$, $y = r\sin(\theta)$, $z = 9 - r^2$ for $0 \leq \theta \leq 2\pi$, $0 \leq r \leq 3$.