ENGR 1204 Programming Languages in Engineering
MATLAB Lab 3 (Water Tank Problem: Looping Approach)

Write a MATLAB program (.m script file) to calculate the time to drain a cylindrical water tank for an initial water height ranging from 1 to 10 feet. The tank has a radius (rt) of 2 feet and the drain radius (ro) is 0.3 inch. The gravitational constant is 32.2 feet/sec.^{2}

The formula for time to drain the tank is

$$\text{time} = (rt / ro)^2 \; h / vavg$$

where $vavg = 0.5 \; (2 \; g \; h)^{1/2}$ (average velocity)

The objective here is to calculate the values of vavg and time for initial water heights (h) of 1, 2, 3, … 10 feet and display the results in a table as shown below.

In your program first assign the values to rt, ro, and g and use disp to display the table title and headings. Then, within a for-loop calculate vavg and time, displaying the values along with h using the formatted print function (fprintf).

Hint: The height h can be used as the index in the loop.

Expected display (don't worry about exact spacing of the headings):

```
Time to Drain Water Tank
   h      vavg     time
  (ft)   (ft/s)   (hrs)
1.00     4.01     0.44
2.00     5.67     0.63

  :        :        :

10.00    12.69    1.40
```