Instructions: Create script or function files as directed.
Turn in the SCORE SHEET (found on website) stapled on top of the paper with the answers to #1 and 2 answered. Email me the function files, with `MATLAB hw2` as the subject of the email.

The functions should have appropriate help lines. If input is required of the user, the directions should be clear. There should be appropriate comments throughout if needed. Your name should appear somewhere towards the top of each file, but not in the help.

1. On the H drive, there are three m-files: `quadratic1.m`, `quadratic2.m`, and `quadratic3.m`. All do *basically* the same thing but in slightly different ways.

   (a) Run quadratic1 using the quadratic equations $x^2 + 2x + 1$ and $x^2 - 2x + 5$ by typing in just the function name with the appropriate inputs on the command line. What are your outputs, respectively?

   (b) Now run quadratic1 on the same equations, but this time by typing in: `A = quadratic1`... How is the output different?

   (c) Now run do parts (a) and (b) but on quadratic2. How does this differ from using quadriatic1? Look at the file to see exactly how this difference occurs. (Don't describe the difference in the code, but the end result of the difference.)

   (d) Look at the code for quadratic3. Describe how this is different than quadratic3. (Again, don't describe the difference in the code, but the end result of the difference.)

2. Write a function named `hw2_1` for the function $f(x) = \dfrac{x^3\sqrt{2x+3}}{(x^4+1)^3}$ that does the following:

   - The input of the function should be x and the output should be the computed value for $f(x)$.
   - Write the function so that x can be a number, vector or matrix.
   - Using the `any` and/or `all` logical operators, test within the function to make sure that all of the numbers are valid for $\mathbb{R}$-valued calculations. If not, an appropriate error message is displayed and the function should stop.
   - You should test your caluculations with at least 4 different inputs. Write down the input tests you used, along with the answers that your function gives you.

3. Write a function file called `rootn` that returns $\sqrt[n]{x}$ and that does the following for a number x:

   - The inputs are n and x of which we are going to compute $\sqrt[n]{x}$. The help lines should indicate what the inputs are and in what order.
   - The function checks that x is a number rather than a vector or matrix. If not, an error message is displayed and the function should stop.
   - Another check is that n is a natural number. If not, an appropriate error message should be displayed and the function should stop.
   - If n is even, it checks to make sure that x is nonnegative. If not, an error message is displayed and the function should stop.
   - If n is odd, it computes the root as expected. In other words, it should give -2 as the answer for $\sqrt[3]{-8}$