Math 308 Additional Problems

The following problems are practice problems for writing “for loops” in Matlab.

1. For each of the following Matlab programs, determine how many times the program will print “Hello World”?

   (a) for i=1:5
       disp('Hello World')
   end

   (b) for i=-9:25
       disp('Hello World')
   end

   (c) for i=1:10
       for j=1:3
           disp('Hello World')
       end
   end

2. For each of the following Matlab programs, determine what number the program will output and why.

   (a) a=3;
       for i=1:10
           a=a+2;
       end;
       a

   (b) a=1;
       for i=1:6
           a=a*i;
       end;
       a
(c) a=0;
    for i=1:5
        for j=3:6
            for k=0:9
                a=a+1;
            end;
        end;
    end;
a
3. Consider the recursively defined sequence with \(a_0 = 2\) and \(a_{n+1} = a_n + 3\). Write a program in Matlab to compute \(a_{10}\).

4. Consider the recursively defined sequence with \(a_0 = 1\), \(a_1 = -2\), and \(a_{n+1} = a_n + 2a_{n-1}\). Write a program in Matlab to compute \(a_{15}\).

5. Consider the recursively defined sequence with \(a_0 = 0.5\) and \(a_{n+1} = a_n^2 - a_n\). Find \(a_{100}\) to 6 decimal places.

6. Consider the recursively defined sequence \(a_0 = 1\), \(a_1 = -1\), \(a_2 = 0\) and \(a_{n+1} = a_n - 2a_{n-1} + 3a_{n-2}\). Write a program in Matlab to compute \(a_{25}\).