

## CS1112 Section Exercise 5

For Problems 1 to 4 below, do *not* use arrays.

1. Write a function `y = Mid3(a,b,c)` that returns the middle of the three values  $a$ ,  $b$ , and  $c$ .
2. Complete the following function so that it performs as specified

```
function [s,c] = Trig(a)
% a is the measure of an angle in degrees (assumed positive)
% s is the sine of the angle
% c is the cosine of the angle
```

Write a script that uses `Trig` to produce a table of sine and cosine values for  $0^\circ, 1^\circ, \dots, 90^\circ$ .

3. Complete the following function so that it performs as specified:

```
function x = IsPythag(a,b,c)
% x has the value of 1 if a triangle with sides a, b, and c is
% a Pythagorean triangle and 0 otherwise.
% It may be assumed that a, b, and c are positive integers.
```

4. The following function produces a pretty good estimate of  $\sin(x)$  if  $|x| \leq 2\pi$ :

```
function y = MySin0(x)
% y is an approximation of sin(x).
y = x - x^3/6 + x^5/120 - x^7/5040;
```

It is horrible if  $|x|$  is large. Using the fact that the sine function is periodic, write a function `MySin1(x)` that produces a good sine approximation for any  $x$ . Make effective use of `MySin0`.

5. Complete the following function so that it performs as specified:

```
function ShowSine(L,R)
% Produces a plot of the sine function across the interval [L,R]
```

You may use function `linspace`.