Problem 1: Compute the following sum,

$$\sum_{i=0}^{10} \left(\sum_{j=0}^{i} \sin(i^2)\cos(j^2) \right)$$

Hint: The first sum is from $i = 0$ to $i = 10$, however, the second inner sum is from $j = 0$ to $j = i$. In other words, after you choose a value of i, the limits of summation are determined for the inner sum. What this means is that you can think of the inner sum as $S(i)$, as something that depends on i. Therefore, the sum is equal to,

$$\sum_{i=0}^{10} S(i) \quad \text{where} \quad S(i) = \sum_{j=0}^{i} \sin(i^2)\cos(j^2)$$

You will need to write a "*double loop*" i.e. a loop within a loop.

Answer: 1.483231

Problem 2: Create a function called `ID`. This function takes as an input a vector $\mathbf{x}$ and arranges the vector into an "*anti-diagonal matrix*" ID($\mathbf{x}$). Instead of the diagonal matrix going from the upper-left to the lower-right, the anti-diagonal matrix goes from the upper-right to the lower-left.