1. (0 points)
   (a) What is the day and time of the midterm?
   (b) What is the *dead-cat policy*?
   (c) What is the *Mask Policy*?

2. (0 points)
   (a) Learn Python 3 and write some simple programs in it.
   (b) Write a program in Python 3 that does the following: input is two vectors of reals of the same length, and output is their dot product.
   (c) Write a program in Python 3 that does the following:
      Input is a text $T$ of English (our intention is that $T$ be a normal english text, like a short article from Wikipedia).
      (1) eliminate all punctuation, numbers, and whitespace,
      (2) replace $a$ and $A$ with 1, . . . , replace $z$ and $Z$ with 26.
      EXAMPLE: On input *I’m Bill* the output is 9 13 2 9 12 12.
      NOTE: We use \{1, . . . , 26\} not \{0, . . . , 25\}.

3. (0 points) Given $a, b$ we want to find if $a^{-1} \pmod{b}$ exists.
   (a) Look up *The Euclidean Algorithm* which is for this problem.
   (b) Code up the algorithm in Python 3.

4. (0 points)
   (a) Learn LaTeX and write some simple documents in it.
   (b) Write a LaTeX document that summarizes the lecture on the Shift Cipher. note that you will need to typeset some mathematics.

**GOTO NEXT PAGE**
5. (0 points) Alice and Bob are going to use the shift cipher. Bob has an idea! Bob says they should pick $s$ so that the encode-key and the decode-key are the same!

(a) List all $s$ so that the encode-key and the decode-key are the same.
(b) Give a reason why Bob’s idea is a good idea.
(c) Give a reason why Bob’s idea is a bad idea.