

1. Suppose $d = \gcd(20202, 82563)$.
 - (a) Find d
 - (b) Find k, l such that $d = 20202 \cdot k + 82563 \cdot l$.
2. For each of the following find $a^{-1} \pmod{m}$ or explain why no such inverse exists. That is, find c such that $ac \equiv 1 \pmod{m}$.
 - (a) $a = 295, m = 29802$
 - (b) $a = 23653, m = 496837$.
3. Decipher the message:

NOAF ODPO BYI

knowing it was encoded with an affine cipher with key $a = 5$ and $b = 14$.
4. (Wait until Wednesday) Break the message:

GRWU RWWR GRWF PCAJ XZAR GPCJ

knowing it was encoded with an affine cipher and contains the word(s) "no longer".
5. (Wait until Wednesday) Find $\phi(102600)$
6.
 - (a) Get a picture of you with Natural World RA, PA (other than JuliAnne) or professor (other than me).
 - (b) Get a picture of a place to buy food on campus that you have never bought food at.