

1. *Suppose that $n > 2$ and $c_1, \dots, c_{\phi(n)}$ is a reduced residue system modulo n . Show that*

$$c_1 + c_2 + \cdots + c_{\phi(n)} \equiv 0 \pmod{n}$$

Your answer here...

2. *Suppose that a and b are relatively prime integers greater than 1. Show that $a^{\phi(b)} + b^{\phi(a)} \equiv 1 \pmod{ab}$*

Your answer here...

3. Find all positive integers n such that $\phi(n) = 12$. Be sure to prove that you have found all solutions.

Your answer here...

4. For which positive integers $n \geq 2$ does $\phi(n) \mid n$?

Your answer here...

5. (*Extra Credit—and don't use the internet for this one*) Prove that $\lim_{n \rightarrow \infty} \phi(n) = \infty$

Your answer here...