

Homework Assignment 2
February 21, 2019

1. Find all primitive roots modulo 17.
2. Let p be a prime and $e \geq 1$. Show that $\phi(p^e) = p^e - p^{e-1}$.
3. Compute $\phi(1080)$.
4. (Challenge) Let p be an odd prime and let b be an integer with $p \nmid b$. Show that the congruence $X^2 \equiv b \pmod{p}$ has either two solutions or no solution in $\mathbb{Z}/p\mathbb{Z}$.