

From the book: page 84, 85 numbers 5, 15

Additional problems

1. Find the smallest primitive root for
 - a. $p = 31$
 - b. $p = 41$

2. How many primitive roots do 31 and 41 have?

3. This problem is related to problem 15, page 85.
 - a. Find all positive integers a such $(a, 10) = 1$ and the decimal expansion of $\frac{1}{a}$ has period 2.
 - b. Find all positive integers a such $(a, 10) = 1$ and the decimal expansion of $\frac{1}{a}$ has period 3.

4. Find all numbers $N = 9 \cdot 10^n + 1$ such that $n < 100$, and N is prime. In each case, prove that N is prime by finding, with proof, a primitive root.