

Øving 9

MA1301 Talteori

Veke 43

1. Find the *two* incongruent solutions modulo 210 of the system

$$2x \equiv 3 \pmod{5}$$

$$4x \equiv 2 \pmod{6}$$

$$3x \equiv 2 \pmod{7}.$$

2. Prove that none of the "repunits" $11, 111, 1111, \dots$ is a perfect square.
3. If $n = pq = 274279$ and $\phi(n) = 272376$, what are the two primes p and q ?
4. (a) The secret key of an RSA-system is $n = 91, r = 29$. Find the public key.
(b) Decrypt the message "9", which was encrypted with this system.
5. Compute $98! \pmod{101}$.
6. Exercise 3.79 from the book.