

Practice Problems

1 From the book

- Section 2.2: 2.4, 2.5.
- Section 2.3: 2.6.
- Section 2.4: 2.8.
- Section 2.6: 2.16.
- Section 2.7: 2.17 (a).
- Section 2.8: 2.18, 2.19.

2 Additional problems

- Let $p = 211$ and let $g = 8$. Use Shanks's Algorithm to compute $\log_g(122)$, $\log_g(150)$ and $\log_g(200)$ in $(\mathbb{Z}/p\mathbb{Z})^*$.
- A woman went to the market and a horse stepped on her basket and crushed her eggs. The rider offered to pay her for the damage. He asked her how many she had brought. She did not know but when she took them out 2 at a time there was one left. The same thing happened when she took them out 3, 5 and 6 at a time but when she took them out 7 at a time there were none left. What is the smallest number that she could have had?
- Determine whether the congruences $5x \equiv 1 \pmod{6}$ and $4x \equiv 13 \pmod{15}$ have a common solution. In case, find a solution.