

PROBLEM SET 6: MODULAR ARITHMETIC
(DUE NOVEMBER 8)

HARM DERKSEN

Problem 1.

- (a) Do 31.3-1 in the book.
- (b) Do 31.3-3 in the book.

Problem 2.

- (a) Do 31.5-1 in the book.
- (b) Do 31.5-2 in the book. (*Hint*: You could first try to find an integer a such that $a \equiv 1 \pmod{9}$ and $a \equiv 2 \pmod{8}$.)

Problem 3.

- (a) What are the last 2 digits of 7^{5555} ? (In other words, what is $7^{5555} \pmod{100}$. You can use Euler's Theorem and/or the modular exponentiation algorithm.)
- (b) Do problem 31.6-3 in the book.

Problem 4. *(Halloween bonus problem) Compute $5^{(5^{666})} \pmod{666}$. (Note that $666 = 2 \cdot 3^2 \cdot 37$.)