Worksheet #8: Binary numbers

(1) Find 61 in binary.

(2) What is the algorithm for computing the binary form of a general number (e.g. 17513)?

(3) What fraction is the binary number $0.\overline{101}$?

(4) Find the binary expansion of $\frac{1}{7}$.

(5) Show how the algorithm for getting the binary expansion is the same as applying the $2x \pmod 1$ map.

(6) So precisely which $x \in [0, 1]$ give chaotic orbits?