

1. (50 points) What is the right-most (i.e. one's place) digit in the expansion of 7^{141} ? You must solve this problem completely by hand - no calculators allowed! Show your work.

2. (50 points) Consider the unit interval $L = [0, 1]$ and the unit square $S = [0, 1] \times [0, 1]$. Prove that $|L| = |S|$. Your proof may be fairly informal (just state the basic idea, not the nitty-gritty). However, if you construct a bijection/injection, you must state why your function is a bijection/injection.