

# MAT4010 Pretest Decimal Expansion

- 0.1. Is  $0.\bar{9} = 0.999\dots$  less than 1, equal to 1 or bigger than 1?
- 0.2. Prove that a number is rational if and only if it has a terminating or repeating decimal expansion.
- 0.3. Why does  $1/2$  have a terminating decimal expansion? Why does  $1/3 = 0.\bar{3}$  have a repeating decimal expansion where the repeating block start right after the decimal point? Why does  $1/6 = 0.1\bar{6}$  have a repeating decimal expansion where there is a digit between the decimal point and the repeating block?
- 0.4. Which fractions  $m/n$  have a terminating decimal expansion? (We can assume that  $m$  and  $n$  do not have any common factors.)