

MATH 270
SUMMER 2007
HOMEWORK 9

Due Tuesday July 24, 2007.

1. Let $n \in \mathbb{N}$.
 - a) (3 pt) Show that n is divisible by 3 if and only if the sum of the digits (base ten decimal expansion) is divisible by 3.
 - b) (3 pt) Show that n is divisible by 9 if and only if the sum of the digits (base ten decimal expansion) is divisible by 9.
 - c) (3 pt) Show that n is divisible by 11 if and only if the alternating sum of the digits (base ten decimal expansion) is divisible by 11.

2. (5 pt) Show that the real number r is a rational number if and only if its decimal expansion is periodic (repeating).