Midterm 2 Version 2 Solution

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April 4, 2020

Question 1

a.

$$100 \div 3 = 33, \text{Remainder } \mathbf{1}$$
$$33 \div 3 = 11, \text{Remainder } \mathbf{0}$$
$$11 \div 3 = 3, \text{Remainder } \mathbf{2}$$
$$3 \div 3 = 1, \text{Remainder } \mathbf{0}$$
$$1 \div 3 = 0, \text{Remainder } \mathbf{1}$$

It follows from above that the ternary representation of 100 is $(10201)_3$.

b. The largest number expressible by an n-digit binary representation is

$$\sum_{i=0}^{n-1} 2^i \tag{1}$$

Question 2

Question 3

Question 4