CISC 1100 —Structure of Computer Science
Fall, 2017 Dr. X. Zhang

Homework Assignment #2

1 For the following sequence, fill in the next two terms of the sequence. Explain how you got it. Then provide a closed formula or recursive formula for the sequence.

a. $2, 9, 16, 23, 30,$

b. $2, 8, 32, 128,$

c. $1, 3, 7, 15, 31, 63,$

2 For the following sequences specified with recursive formula, decide whether it's arithmetic sequence or geometric sequence, and then find the sequence's closed formula:

a.

$$a_1 = 3$$
$$a_n = a_{n-1} + 11$$

b.

$$b_1 = 2$$
$$b_n = 5b_{n-1}$$

3 Evaluate the following summation:

a.

$$\sum_{n=2}^{5}(2n+1)$$

b.

$$\sum_{n=3}^{5}((n-1)^2+1)$$

4 Express the following summations using the big sigma notations:

a. $3 + 14 + 25 + 36 + 47 + 58$

b. $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32}$.

5 Convert the following numbers to base 10 representation (i.e., decimal numbers):

a. $(11001)_2$

b. $(507)_8$

c. $(2A0B)_{16}$ to binary).

6 Write the decimal number 137 in (note, b and c are extra credits problems)

a. Binary representation

b*. Octal representation (i.e., base 8)

c*. Hexadecimal representation (i.e., base 16)