Worksheet 5

CS 2210 Discrete Structures

Due 2/26 9pm. Late submissions get grade 0.

* Teams of 3-4 students (must work in group). Follow directions given during discussion.

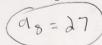
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Namel: Cobin Bligs Name 2: Colin Cano

Name 3: Hongwei 2hou Name 4:

Question 1: Let sequence $\{a_n\}$ be -8, -3, 2, 7, ... $(a_1 = -8)$

a. Find
$$a_8$$
 $a_n = \{-9, -3, 2, 7, 12, 17, 23, 27\}$



b. Find $\sum_{i=3}^{8} a_n$



c. Find recursive formula for a_n .

$$a_n = a_{n-1} + 5$$

d. Find explicit (iterative) formula for a_n .

$$Q_n = 5_n - 13$$

Question 2: Find $\sum_{i=0}^{100} 6 \cdot 2^i$. Hint: Use formula from section 2.4.

$$\frac{6 \cdot \lambda^{101} - 6}{2 - 1} = \frac{6 \cdot \lambda^{100} - 6}{6 \cdot \lambda^{100} - 6}$$

Question 3: Determine whether each of these sets is countable or uncountable. For those that are
countably infinite, exhibit a one-to-one correspondence between the set of positive integers and
that set. Explain/proof when can why it is 1-1 correspondence.

Onto X no because it cannot represent all numbers.

(b) All positive rational numbers that cannot be written with denominators less than 4.

(c) The real numbers not containing 0 in their decimal representation

(d) The real numbers containing only a finite number of 1s in their decimal representation