ALGEBRA 2 HONORS
PROBLEM SET #1

DUE DATE: AUGUST 21, 2023

Question 1. Compute the following:

$$(a) \quad 5\left((2+7) \div 3\right)$$
$$(b) \quad \frac{8+2\times 3}{12}$$

Question 2. Simplify the expression

$$10 - 2 \cdot 7 + (11-5)^2 \div 3 + 2(10-3)^{4^2-45\div 3}.$$

Question 3. Simplify and compute the expression

$$10 - (\frac{6}{3} - 4 \times 2) - 8 \times 3 + 1.$$

Question 4. Identify a pattern and find the next three numbers in the pattern:

(a) $1, 3, 9, 27, 81, ...$
(b) $2, 6, 10, 14, ...$
(c) $1, 1, 2, 3, 5, 8, 13, 21, ...$

Question 5. What is the 7th number in this pattern?

$$8, 13, 18, 23, ...$$

(a) 28
(b) 38
(c) 33
(d) 43

Question 6. Let (a_n) be the sequence given below:

$$(3, 5, 1, -3, 7, \pi, 5^{23}, 0, 2023)$$

For each given n, identify a_n.

(a) $n = 1$
(b) $n = 4$
(c) $n = 2$
(d) $n = 7$

Question 7. Let (a_n) and (b_n) be the sequences given below:

n	1	2	3	4	5	6	7
(a_n)	1	4	6	8	10	12	14
(b_n)	1	4	9	16	25	36	49
(c_n)	3	3	3	-3	-3	-3	3

(1) Identify the 5th object in each sequence (which of the above are sequences?)
(2) Define a new sequence by the equation

$$(d_n) \overset{\text{def}}{=} a_n + b_n + c_n$$

What are the values of d_1, d_2, d_3, d_4, and d_5 going to be equal to?