Math 1190 Quiz #11

Problem 1: How many five-digit multiples of 3 end with the digit 6?

Problem 2: Find all real solutions x of the equation

$$\sqrt{x + 1972098 - 1986\sqrt{x + 986049}} + \sqrt{x + 1974085 - 1988\sqrt{x + 986049}} = 1.$$

Problem 3: Determine, with proof, the number of ordered triples (A_1, A_2, A_3) of sets which have the property that

(1) $A_1 \cup A_2 \cup A_3 = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, and
(2) $A_1 \cap A_2 \cap A_3 = \emptyset$,

where $\emptyset$ denotes the empty set. Express the answer in the form $2^a 3^b 5^c 7^d$ where a, b, c, and d are nonnegative integers.

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