Problem 1 (6pts)

A binary operation o is defined as following:

$$a \circ b = a + 2b$$

Is the binary operation associative and commutative? Justify your answer.

Problem 2 (8pts)

1. Let $G = \{|x|, \text{ for all } x \in \mathbb{R}\}$. Is $(G, +)$ a group? Justify the answer.

2. Is $(G, .)$ a group? Justify the answer.

Problem 3 (6pts)

Using induction to prove that: $6^n - 1$ is divisible by 5, for n any positive integer.

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