

PROBLEMS

1. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a function satisfying

$$f(x+y) = f(x) + f(y) \quad \text{for all } x, y \in \mathbb{R}.$$

$$f(x) = x^2 \quad \text{for all } x \in \mathbb{R}.$$

$$f(x) = x^3 \quad \text{for all } x \in \mathbb{R}.$$

$$f(x) = x^4 \quad \text{for all } x \in \mathbb{R}.$$

2. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a function satisfying

3. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a function satisfying

4. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a function satisfying

5. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be a function satisfying