

[illegible]

1. Definition: A function $f: X \rightarrow Y$ is called linear if it satisfies the following two properties:

2. Additivity: For any $x, y \in X$ and $\alpha \in \mathbb{R}$, it holds that $f(x + y) = f(x) + f(y)$.

3. Homogeneity: For any $x \in X$ and $\alpha \in \mathbb{R}$, it holds that $f(\alpha x) = \alpha f(x)$.

4. Examples: The zero function $f(x) = 0$ is linear. The identity function $f(x) = x$ is linear. The function $f(x) = 2x$ is linear.

5. Properties: The sum of two linear functions is linear. The scalar multiple of a linear function is linear.

6. Conclusion: Linear functions are fundamental in many areas of mathematics and physics.

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$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

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1. The first group of people who are interested in the results of the study are the researchers themselves. They want to know if the study was successful in achieving its goals and if the data collected is reliable and valid.