Linearity

Definition

A linear function $f(x)$ is one with the property

$$f(ax_1 + bx_2) = af(x_1) + bf(x_2)$$

Problems

1. Prove that $f(x) = \beta x$ is linear.
2. Prove that $f(x) = \beta_0 + \beta_1 x + \beta_2 x^2$ is *not* linear.