Quiz 3

03 Support Vector Machines, Convex Optimization

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1   Convexity

Prove that if $f(x)$ is convex, $f(\alpha x + \beta)$ is convex for scalars α, β. Hint: If you're stuck, take $g(x) = \alpha x + \beta$.

2   Linear Algebra

Compute the variance of $u \in \mathbb{R}^n$, where $u \sim (0, I)$. This notation simply means that u is sampled from some distribution with mean 0, where the covariance matrix of u is I. Consider $A \in \mathbb{R}^{n \times n}$. Compute variance of $y = Au$.