

Adaptive Rejection Sampler

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A function $f : \chi \rightarrow \Re$ is concave if and only if for any $\theta \in [0, 1]$, $x_1, x_2 \in \chi \subseteq \Re^d$:

$$f(\theta x_1 + (1 - \theta)x_2) \geq \theta f(x_1) + (1 - \theta)f(x_2)$$

For $j = 1, \dots, k - 1$ the tangents at x_j and x_{j+1} intersect at:

$$z_j = \frac{h(x_{j+1}) - h(x_j) - x_{j+1}h'(x - j + 1) + x_j h'(x_j)}{h'(x_j) - h'(x_{j+1})}$$

Thus for $x \in [z_{j-1}, z_j]$ and $j = 1, \dots, k$, we define:

$$u_k(x) = h(x_j) + (x - x_j)h'(x_j)$$

where z_0 is the lower bound of Domain D and z_k is the upper bound of D . We also define: