$if\ decide\ y = j$

$Risk(\alpha_i|y = j)$

$$= \sum_{k=1}^{C} L(\alpha_k|y = j)p(y = k|x)$$

$$= 0 * p(y = j|x) + \sum_{k=1,k\neq j}^{C} \lambda_s p(y = k|x)$$

$$= \lambda_s\big(1 - p(y = j|x)\big)$$

$j\ is\ the\ most\ probable\ class \rightarrow p(y = j|x) \geq p(y = k|x)$

$if\ p(y = j|x) \geq 1 - \frac{\lambda_r}{\lambda_s}, 1 - p(y = j|x) \leq \frac{\lambda_r}{\lambda_s}$

$Risk(\alpha_i|y = j) = \lambda_s\big(1 - p(y = j|x)\big) \leq \lambda_s * \frac{\lambda_r}{\lambda_s} = \lambda_r, which\ is\ smaller\ than\ the\ loss\ of\ reject$

$Thus, the\ minimum\ risk\ is\ obtained\ if\ we\ decide\ y = j\ if\ p(y = j|x) \geq p(y = k|x)\ for$

$all\ k\ and\ if\ p(y = j|x) \geq 1 - \frac{\lambda_r}{\lambda_s}$