Consider a simple two-category case:

$$\mathrm{R}(\alpha_i|x) = \lambda_{11}P(\omega_1|x) + \lambda_{12}P(\omega_2|x)$$
$$\mathrm{R}(\alpha_2|x) = \lambda_{21}P(\omega_1|x) + \lambda_{22}P(\omega_2|x)$$

If $R(\alpha_1|x) < R(\alpha_2|x)$, then ω_1 is the right category to choose Now

$$\begin{aligned}
R(\alpha_1|x) - R(\alpha_2|x) &\equiv -(\lambda_{21} - \lambda_{11})P(\omega_1|x) + (\lambda_{12} - \lambda_{22})P(\omega_2) && (1)\\
(R(\alpha_1|x) < R(\alpha_2|x)) &\equiv ((\lambda_{11}P(\omega_1|x) + \lambda_{12}P(\omega_2|x)) < (\lambda_{21}P(\omega_1|x) + \lambda_{22}P(\omega_2|x))) && (2)\\
&\equiv ((\lambda_{11}P(\omega_1|x) + \lambda_{12}P(\omega_2|x) - \lambda_{21}P(\omega_1|x)) < (\lambda_{22}P(\omega_2|x))) && (3)\\
&\equiv (((\lambda_{11} - \lambda_{21})P(\omega_1|x)) < \lambda_{22}P(\omega_2|x)) - \lambda_{12}P(\omega_2|x)) && (4)\\
&\equiv (((\lambda_{11} - \lambda_{21})P(\omega_1|x)) < (\lambda_{22} - \lambda_{12})P(\omega_2|x) && (5)
\end{aligned}$$