

$$\begin{aligned} (v^{(ij)})^T \nabla f(x^{(i)}) &\leq s^{(ij)} + a^{(ij)} \\ (-v^{(ij)})^T \nabla f(x^{(i)}) &\leq a^{(ij)} - s^{(ij)}. \end{aligned}$$