Sta 250 homework1

$$\begin{aligned}
\alpha f(x_1, x_2) + (1-\alpha) f(y_1, y_2) &= \alpha ||x_1 - x_2||_2^2 + (1-\alpha)||y_1 - y_2||_2^2 && (1)\\
&= \sum_{i=1}^{2} [\alpha (x_{1i} - x_{2i})^2 + (1-\alpha)(y_{1i} - y_{2i})^2] && (2)\\
f(\alpha x_1 + (1-\alpha) y_1, \alpha x_2 + (1-\alpha) y_2)) &= \sum_{i=1}^{2} [\alpha (x_{1i} - x_{2i}) + (1-\alpha)(y_{1i} - y_{2i})]^2 && (3)
\end{aligned}$$