Assignment 1 MAT 257

Q4:

Suppose that  $\langle x, y \rangle = 0$ . It follows that

$$\begin{aligned} & \|x+y\|^2 \\ &= \langle x+y, x+y \rangle \\ &= \langle x, x \rangle + 2 \langle x, y \rangle + \langle y, y \rangle \\ &= \langle x, x \rangle + \langle y, y \rangle \\ &= \|x\|^2 + \|y\|^2 \end{aligned} \blacksquare$$