Exercises

E14.4 [16Y] Let $C \subseteq \mathbb{R}^n$ be a set; show that it is *convex* if and only if it contains every *convex combination* of its points, that is: for every $k \geq 1$, for every choice of $x_1, \ldots x_k \in C$, for each choice $t_1, \ldots t_k \geq 0$ with $t_1 + \cdots + t_k = 1$, you have

$$x_1 t_1 + \cdots + x_k t_k \in C \quad .$$