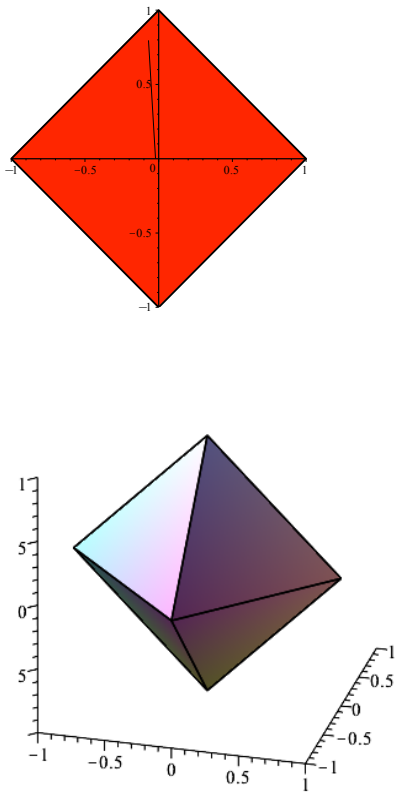

Figure 9.1: The top figure is $\{x \in \mathbb{R}^2 \mid \|x\|_1 \leq 1\}$, while the bottom figure is $\{x \in \mathbb{R}^3 \mid \|x\|_1 \leq 1\}$.

There are other norms besides the ℓ^p-norms. Here are some examples.

1. For $E = \mathbb{R}^2$,
$$\|(u_1, u_2)\| = |u_1| + 2|u_2|.$$
See Figure 9.5.

2. For $E = \mathbb{R}^2$,
$$\|(u_1, u_2)\| = \left((u_1 + u_2)^2 + u_1^2\right)^{1/2}.$$
See Figure 9.6.

3. For $E = \mathbb{C}^2$,
$$\|(u_1, u_2)\| = |u_1 + iu_2| + |u_1 - iu_2|.$$

The reader should check that they satisfy all the axioms of a norm.

Some work is required to show the triangle inequality for the ℓ^p-norm.