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# TITLE OF PAPER

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## 2. Main results

The following is an example of a definition.

**Definition 2.1.** Let $\mathcal{X}$ be a real or complex linear space. A mapping $\|\cdot\| : \mathcal{X} \to [0, \infty)$ is called a 2-norm on $\mathcal{X}$ if it satisfies the following conditions:

(1) $\|x\| = 0 \Leftrightarrow x = 0$,
(2) $\|\lambda x\| = \|\lambda\|\|x\|$ for all $x \in \mathcal{X}$ and all scalar $\lambda$,
(3) $\|x+y\|^2 \leq 2\left(\|x\|^2 + \|y\|^2\right)$ for all $x, y \in \mathcal{X}$.

Here is an example of a table.

Table 1.

| | | |
|---|---|---|
| 1 | 2 | 3 |
| $f(x)$ | $g(x)$ | $h(x)$ |
| $a$ | $b$ | $c$ |

This is an example of a matrix

$$\begin{bmatrix} 1 & -2 \\ 3 & 5 \end{bmatrix} \qquad \begin{vmatrix} 5 & 2 \\ 0 & 3 \end{vmatrix} \qquad \begin{Vmatrix} 5 & 2 \\ 0 & 3 \end{Vmatrix}$$

The following is an example of an example.

**Example 2.2.** Let $\theta : \mathcal{A} \to \mathcal{A}$ be a homomorphism. Define $\varphi : \mathcal{A} \to \mathcal{A}$ by $\varphi(a) = a_0\theta(a)$. Then we have

$$\begin{aligned} \varphi(a_1 \dots a_n) &= a_0\theta(a_1 \dots a_n) \\ &= a_0^n\theta(a_1)\dots\theta(a_n) \\ &= a_0\theta(a_1)\dots a_0\theta(a_n) \\ &= \varphi(a_1)\dots\varphi(a_n). \end{aligned} \tag{2.1}$$

Hence $\varphi$ is an $n$-homomorphism.

The following is an example of a theorem and a proof. Please note how to refer to a formula.

**Theorem 2.3.** *If* $\mathbf{B}$ *is an open ball of a real inner product space* $\mathcal{X}$ *of dimension greater than* 1, $\mathcal{Y}$ *is a real sequentially complete linear topological space, and* $f : \mathbf{B} \setminus \{0\} \to \mathcal{Y}$ *is orthogonally generalized Jensen mapping with parameters*

*$s = t > \frac{1}{\sqrt{2}} r$, then there exist additive mappings $T : \mathcal{X} \to \mathcal{Y}$ and $b : \mathbb{R}_+ \to \mathcal{Y}$ such that $f(x) = T(x) + b(\|x\|^2)$ for all $x \in \mathbf{B} \setminus \{0\}$.*

*Proof.* First note that if $f$ is a generalized Jensen mapping with parameters $t = s \geq r$, then

$$\begin{aligned} f(\lambda(x+y)) &= \lambda f(x) + \lambda f(y) \\ &\leq \lambda(f(x) + f(y)) \\ &= f(x) + f(y) \end{aligned} \tag{2.2}$$

for some $\lambda \geq 1$ and all $x, y \in \mathbf{B} \setminus \{0\}$ such that $x \perp y$.

Step (I)- the case that f is odd: Let $x \in \mathbf{B} \setminus \{0\}$. There exists $y_0 \in \mathbf{B} \setminus \{0\}$ such that $x \perp y_0$, $x + y_0 \perp x - y_0$. We have

$$\begin{aligned} f(x) &= f(x) - \lambda f\left(\frac{x+y_0}{2\lambda}\right) - \lambda f\left(\frac{x-y_0}{2\lambda}\right) \\ &\quad + \lambda f\left(\frac{x+y_0}{2\lambda}\right) - \lambda^2 f\left(\frac{x}{2\lambda^2}\right) - \lambda^2 f\left(\frac{y_0}{2\lambda^2}\right) \\ &\quad + \lambda f\left(\frac{x-y_0}{2\lambda}\right) - \lambda^2 f\left(\frac{x}{2\lambda^2}\right) - \lambda^2 f\left(\frac{-y_0}{2\lambda^2}\right) \\ &\quad + 2\lambda^2 f\left(\frac{x}{2\lambda^2}\right) \\ &= 2\lambda^2 f\left(\frac{x}{2\lambda^2}\right). \end{aligned}$$

Step (II)- the case that f is even: Using the same notation and the same reasoning as in the proof of Theorem 2.3, one can show that $f(x) = f(y_0)$ and the mapping $Q : \mathcal{X} \to \mathcal{Y}$ defined by $Q(x) := (4\lambda^2)^n f((2\lambda^2)^{-n} x)$ is even orthogonally additive.

Now the result can be deduced from Steps (I) and (II) and (2.2). □

The following is an example of a remark.

*Remark* 2.4. One can easily conclude that $g$ is continuous by using Theorem 2.3.

Again, note how we refer to Theorem 2.3 and formula (2.1).

**Acknowledgement.** Acknowledgements could be placed at the end of the text but precede the references.

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