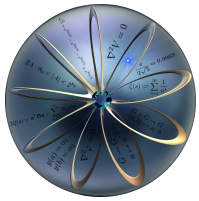

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derivative of even/odd function (proof)

Canonical name	DerivativeOfEvenoddFunctionproof
Date of creation	2013-03-22 13:37:57
Last modified on	2013-03-22 13:37:57
Owner	mathcam (2727)
Last modified by	mathcam (2727)
Numerical id	5
Author	mathcam (2727)
Entry type	Proof
Classification	msc 26A06

Suppose $f(x) = \pm f(-x)$. We need to show that $f'(x) = \mp f'(-x)$. To do this, let us define the auxiliary function $m : \mathbb{R} \to \mathbb{R}$, $m(x) = -x$. The condition on f is then $f(x) = \pm(f \circ m)(x)$. Using the chain rule, we have that

$$\begin{aligned} f'(x) &= \pm(f \circ m)'(x) \\ &= \pm f'\big(m(x)\big)m'(x) \\ &= \mp f'(-x), \end{aligned}$$

and the claim follows. $\square$