

## Re: Dirac–Delta function

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In article <nbKdnQmCfvd5xcLcRVn–uQ@rogers.com>, Adam <addam@rogers.com> wrote:

> *Hi,*

>

> *I would like to know what mathematicians think of the Dirac–Delta function.*

> *Also, what the pure mathematics way of writing and defining it would be.*

It is a "generalized function" or a "distribution". Mathematicians cover these in a course known as "Functional Analysis". Maybe you will take that course one day.

>

> *This is how the delta function has been "defined."*

> *Let  $h$  denote the delta function.*

>  *$\int_{-\infty}^{+\infty} h(x)f(x)dx = f(0)$ .*

>  *$\int_{-\infty}^{+\infty} h(x)dx = 1$ .*

>

> *I was used to reading things like: "Let  $f: \mathbb{R} \rightarrow \mathbb{R}$  denote a function defined*

> *by  $f(x) = x^2$  for all  $x$  in  $\mathbb{R}$ ."*

>

> *The dirac–delta function doesn't really make any sense.*

True. Perhaps you can convince the theoretical physicists to stop using it. But I wouldn't count on it.

> *I understand that*

> *can be thought of as the limit of ever increasing functions centered at the*

> *origin, but how do pure mathematicians define and describe it?*

>

> *Please provide a description like " $h: \mathbb{R} \rightarrow \mathbb{R}$ " etc, if possible. The function*

> *seems very strange.*

>

> *Thanks, Adam.*

>

>