Subject: sin() function in IDL 4.0.1
Posted by Miska Le Louarn on Mon, 12 Feb 1996 08:00:00 GMT
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Hello,
I just found an interesting behaviour of the sine function:
when I ask IDL (4.0.1) to calculate sin(pi) here is what I get:

```
IDL> print,sin(!Dpi)
   1.2246064e-16            ; This should be 0.0000... (?)
```

On the other hand, sin(0) works fine:

```
IDL> print,sin(0D0)
       0.0000000            ; This seams to be a "real" 0
```

I also tested cos(!Dpi):

```
IDL> print,cos(!Dpi)
      -1.0000000
```

and cos(0D0):

```
IDL> print,cos(0D0)
       1.0000000
```

Another different behaviour is:

```
IDL> print,cos(!Dpi/2D0)
   6.1230318e-17
```

So my question is: why are there two different kind of zeroes ? is it a bug ? a "feature" ? or maybe simply a format question (the result is sometimes rounded...)
I know that there can be round-off errors and things like that, so I am not surprised by the answer itself but rather by the difference between within what should be the same...

Has anyone a good explanation for that ?

Thanks
Miska

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Subject: Re: sin() function in IDL 4.0.1
Posted by chs11 on Fri, 16 Feb 1996 08:00:00 GMT
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In article <311F6435.143A@eso.org>, Miska Le Louarn <lelouarn@eso.org> wrote:
> Hello,
> I just found an interesting behaviour of the sine function:
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>
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>   1.2246064e-16   ; This should be 0.0000... (?)

If you want to see something even more interesting, try this...

IDL> plot,sin(dindgen(1000)*!Dpi)

or even worse...

IDL> plot,sin(dindgen(1000)*1e20*!Dpi)

This is quite troublesome.

Carl