Subject: Re: Inaccuracies
Posted by bowman on Mon, 13 Nov 1995 08:00:00 GMT
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In article <30A7BC4D.7018@cdc.noaa.gov>, Andy Loughe <afl@cdc.noaa.gov> wrote:

> IDL> a = findgen(15)*.2 - 1.4
> IDL> print, total(a)
> 7.15256e-07

~7 significant figures is what you expect from single precision arithmetic.

> IDL> a = dindgen(15)*(.2D)-1.4D
> IDL> print, total(a, /double)
> 4.4408921e-15

~15 is what you expect from double precision.

You can do this:

```
IDL> i = LINDGEN(15)*2L - 14L
IDL> print, i
       -14       -12       -10        -8        -6        -4
        -2         0         2         4         6         8
        10        12        14
IDL> c = DOUBLE(i)/DOUBLE(10)
IDL> print, c
     -1.4000000     -1.2000000     -1.0000000    -0.80000000
    -0.60000000    -0.40000000    -0.20000000      0.0000000
     0.20000000     0.40000000     0.60000000     0.80000000
      1.0000000      1.2000000      1.4000000
```

which gives you an exact 0 (division of 0 by anything should(!) be exactly 0), but the other terms are not necessarily exact, and you still get

```
IDL> print, total(c)
   2.2204460e-16
```

which is the best you can hope for.

That's floating point arithemtic ...

Regards, Ken Bowman

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