Subject: Fun with Int_tabulated.pro
Posted by wlandsman on Fri, 30 Oct 2009 17:20:57 GMT
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I ran into a couple of gotchas with int_tabulated.pro this
morning, It performs numerical integration for the simple case:

```
IDL> x = findgen(5)
IDL> y  = x^2
IDL> print,int_tabulated(x,y)
21.3333
```

But if one has flipped both vectors (say while converting wavelength
to frequency), then -- even though a plot of the two vectors looks
exactly the same -- int_tabulated gives a different answer.

```
IDL> x = reverse(x) & y = reverse(y)
IDL> print,int_tabulated(x,y)
42.3619
```

A closer look at the int_tabulated documentation tells us that if X if
not monotonic increasing, then one needs to set the /SORT keyword.
So now we follow the documentation:

```
IDL> print,int_tabulated(x,y,/sort)
21.3333
```

and get the right answer again. But as the documentation also "sort"
of warns
you, setting the /SORT keyword reorders the input X and Y variables.
This is
probably not a problem unless one has modified the Y vector on the fly
by
some factor f

```
 f = findgen(5) + 0.5
 print,int_tabulated(x, y*f,/sort)
```

Upon output, the X vector has been sorted, but the Y vector has not,
since it
was passed as part of a temporary variable y*f. So one has lost
the one to
one correspondence between X and Y, screwing up all subsequent
processing.

--Wayne