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Subject: fractional powers of negative numbers?

Posted by [Med Bennett](#) on Thu, 24 Apr 1997 07:00:00 GMT

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Can someone explain this to me? Is it possible to compute the fractional power of a negative number? IDL does it on single negative values but not on arrays containing negative values.

```
IDL> print,findgen(11)-5
-5.00000 -4.00000 -3.00000 -2.00000
-1.00000 0.00000 1.00000 2.00000
3.00000 4.00000 5.00000
IDL> print,(findgen(11)-5)^1.51
-1.#IND0 -1.#IND0 -1.#IND0 -1.#IND0
-1.#IND0 0.00000 1.00000 2.84810
5.25355 8.11168 11.3617
% Program caused arithmetic error: Floating illegal operand
IDL> print,-2.^1.51
-2.84810
IDL> print,-5.^1.51
-11.3617
```

Med Bennett  
bennettm@boulder.pti-enviro.com

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Subject: Re: fractional powers of negative numbers?

Posted by [Ewan A. Macpherson](#) on Thu, 24 Apr 1997 07:00:00 GMT

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Med Bennett wrote:

> Can someone explain this to me? Is it possible to compute the fractional  
> power of a negative number? IDL does it on single negative values but  
> not on arrays containing negative values.

> IDL> print,-2.^1.51  
> -2.84810  
> IDL> print,-5.^1.51  
> -11.3617

These may not give an error, but they're wrong. The results are going to be complex. IDL is giving you  $-(2^{1.51})$ , not  $(-2)^{1.51}$ , which gives me an error in PV-WAVE. When you do it on the array it is not treating the negative sign as a negation operator, but as part of the value, hence the error. You'll need to do something like this:

```
print, exp(1.51 * alog(complex(-2,0)))
```

which gives: ( 0.0894611, -2.84669)

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