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Subject: Re: CHECK\_MATH and exp()  
Posted by [James Kuyper](#) on Wed, 28 Aug 2002 14:22:06 GMT  
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Surendar Jeyadev wrote:

```
>  
> Could someone please explain this:  
...  
> WAVE> y = exp(-9.4^2)  
> % Program caused arithmetic error: Floating underflow  
> % Program caused arithmetic error: Floating illegal operand
```

I only get the first message, not the second.

```
> ... Also, why does CHECK_MATH() not catch the  
> underflow.
```

Because, as the documentation says:

"No errors detected since the last interactive prompt or call to CHECK\_MATH".

Since the exp() call occurred before the last interactive prompt, it doesn't count. Instead, try the following:

```
IDL> y = exp(-9.4^2) & print,check_math(-1)  
% Program caused arithmetic error: Floating underflow  
32
```

check\_math() wasn't really intended for use at the command line; you get immediate notification of errors when working interactively, so it isn't needed.

```
> And, now for more:  
>  
> WAVE> .run  
> - for i=90,100 do begin  
> - x = i/10.0  
> - y = exp(-x^2)  
> - print, x, y, check_math(1,0)  
> - endfor  
> - end  
> % Compiled module: $MAIN$.  
> 9.00000 6.63968e-36 128  
> 9.10000 1.08661e-36 128  
> 9.20000 1.74307e-37 128  
> 9.30000 2.74074e-38 128  
> % Program caused arithmetic error: Floating underflow
```

```
> % Program caused arithmetic error: Floating illegal operand
>      9.40000 4.22418e-39      160
...
```

I get:

```
% Compiled module: $MAIN$.
```

```
  9.00000 6.63968e-36      0
```

```
  9.10000 1.08661e-36      0
```

```
  9.20000 1.74307e-37      0
```

```
  9.30000 2.74074e-38      0
```

```
% Program caused arithmetic error: Floating underflow
```

```
  9.40000  0.00000      32
```

```
> I am running PV-WAVE CL Version 6.01 (sun4 solaris sparc)
> on a Sun Ultra 10 under Solaris 8.
```

I am running idl 5.4 on an SGI machine running IRIX,

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