

# Sample document

Here is a problem I found at <http://www.walkingrandomly.com/?cat=17>. Here is the solution using *Mathematica* code.

$$\text{In[1]:= } \int_0^1 \frac{\text{ArcSin}[z]}{z} dz$$

$$\text{Out[1]= } \frac{1}{2} \pi \text{Log}[2]$$

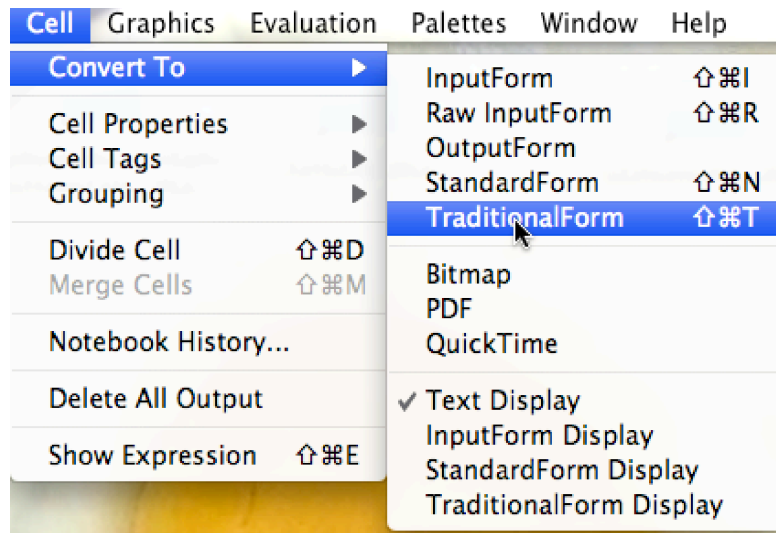
Hmmm, is **Log**, log to the base ten? Adding a question mark gives a brief explanation with an accompanying link to the help documentation.

In[2]:= **? Log**

Log[z] gives the natural logarithm of z (logarithm to base e).

Log[b, z] gives the logarithm to base b. >>

So it is natural logarithm. Some people don't like to way this sort of code looks, they prefer a mathematical textbook type of appearance, so I'll evaluate again, this time using **TraditionalForm**. The pasted screen grab shows how to make the change via the menu.



So now I evaluate the mathematical typeset integral again:

$$\text{In[3]:= } \int_0^1 \frac{\sin^{-1}(z)}{z} dz$$

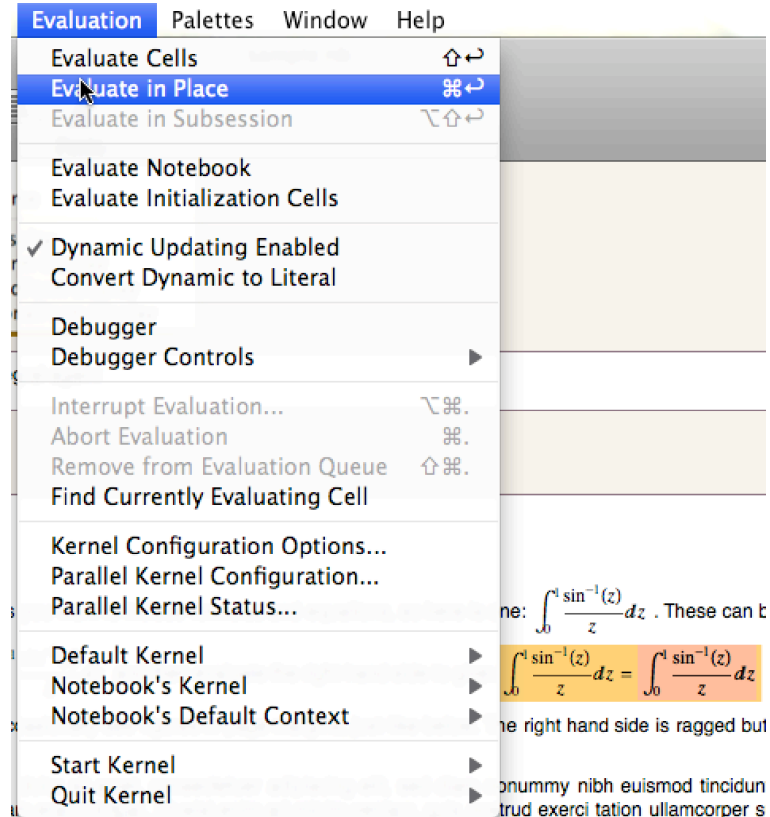
$$\text{Out[3]= } \frac{1}{2} \pi \log(2)$$

When you write a paragraph of text sometimes you want to include formulas and equations, so

here is one:  $\int_0^1 \frac{\sin^{-1}(z)}{z} dz$ . These can be evaluated inline. For example you can write

$\int_0^1 \frac{\sin^{-1}(z)}{z} dz = \int_0^1 \frac{\sin^{-1}(z)}{z} dz$  and then highlight and evaluate the right hand side to give:

$$\int_0^1 \frac{\sin^{-1}(z)}{z} dz = \frac{1}{2} \pi \log(2)$$



Of course I need not have In textbooks you occasionally see figures in page margins, just like below. The right hand side is ragged but I could have justified the text.

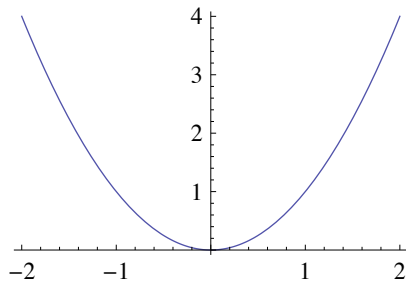
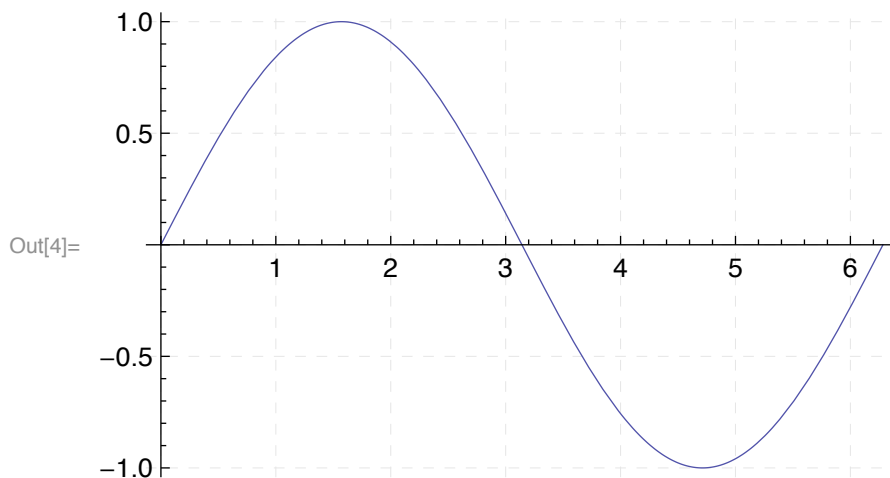


Fig 5. A simple margin plot.

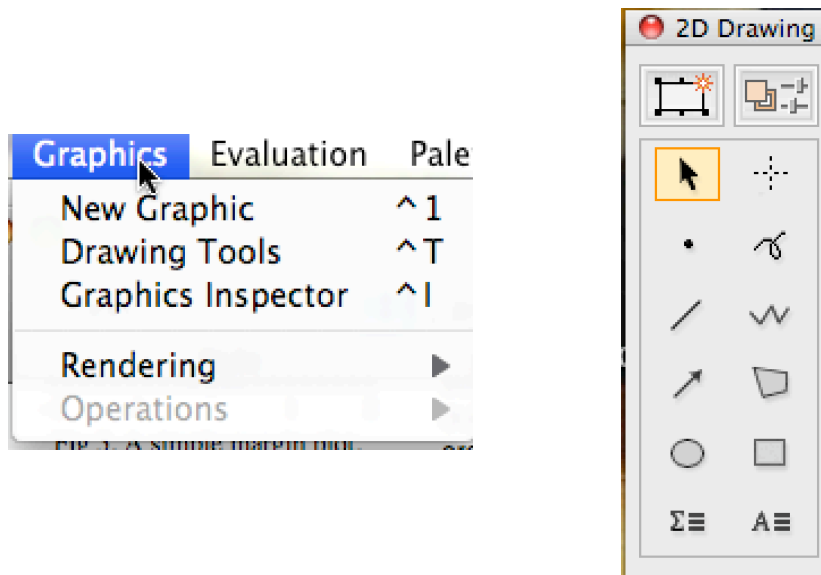
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I'll make a plot and then stick some text over it and an arrow:

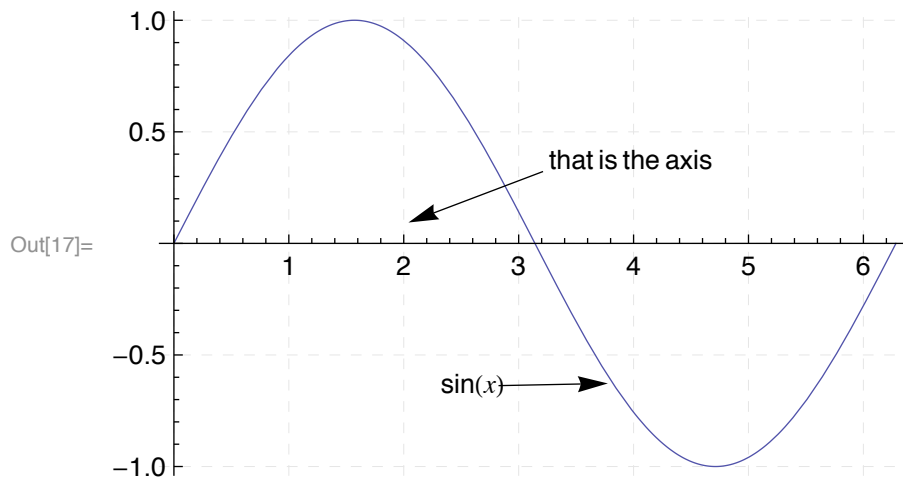
```
In[4]:= Plot[sin(x), {x, 0, 2 π}]
```



To add text and an arrow I use a 2D drawing palette. Here are the pasted in screen grabs:



...and here is the result.



I haven't bothered to make aesthetically nice coloring etc.