
Subject: value of a function at $y(0)$ given the definite integral
Posted by [aqueous0123](#) on Mon, 22 Oct 2001 20:41:58 GMT
[View Forum Message](#) <> [Reply to Message](#)

Say I know the shape of a function $y(x)$. Say it's x^2 .
Say I know the integral from a to b of this function. Say it's 1.0.

What I want to do is find out the value of the function at $y(0)$ given the info above, mainly

$y(x) = x^2$
 $\text{integral_ab}(y(x)) = 1.0$
What's the value of $y(\text{lowerLimit})$?

Does anybody know how to solve for this?

I was going along the lines of:

- 1) find indefinite integral of $y(x)$, call this Y
- 2) so... $Y(b) - Y(a) = 1.0$. Correct? Then I just solve for Y at lower limit.
- 3) $Y(a) = Y(b) - 1.0$. $\Rightarrow Y(a)$ is my answer, I think, or do I have to differentiate this?

So if I can find the indefinite integral of $y(x)$ and then just use algebra to solve by that rule $Y(\text{upperLimit}) - Y(\text{lowerLimit}) = \text{definiteIntegral}$. Am I right?

In my above example of $y(x) = x^2$, say the limits $[a,b]$ are $[0,3]$. To find what's going on at $x=0$, I'd have:

$\text{integral}(x^2) = Y = x^3/3$;the indefinite integral of x^2
 $Y(3) - Y(0) = 1.0$
 $3^3/3 - Y(0) = 1.0$
 $9 - Y(0) = 1.0$
 $Y(0) = 8$
;what to do now?? I thought I'd just plug in my lower limit (here 0)
for x in $x^3/3 = 8$, but then eqn is in form $\text{const}=\text{const}$!
 $0^3/3 = 8$
 $1/3 = 8$

Ok, now I've gone astray. I must be missing something.

My problems are

- 1) I'm not sure if I'm approaching this the correct way and
- 2) How do I get the indefinite integral in IDL. `QSimp()`, etc. find only definite integrals. I think I need the indefinite integ. so I can

find my value at $y(\text{lowerLimit})$. Or, is my entire approach wrong?

Does this make sense??

THanks
