
Subject: Re: value of a function at $y(0)$ given the definite integral

Posted by [a](#) on Fri, 26 Oct 2001 22:24:24 GMT

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Hmmm...

```
;find integral of known fn x^2 over interval [0,1]
```

```
x = findgen(11)/10.
```

```
print, int_tabulated( x, x^2 )
```

```
0.333406
```

Here, we know

1) $\text{integral_aTOb} = 1/3$ (where $a=0$ & $b=1$)

2) $y(0) = 0^2 = 0$

3) $y(1) = 1^2 = 1$

Using JD's stuff, let's find A for this plain jane case

$$A \int_0^1 (x^2 dx) = 1/3$$
$$A * (1^3/3 - 0^3/3) = 1/3$$
$$A = 1$$

Of course, it should be 1 because that's the normalization constant we assumed when we calculated using `int_tabulated(x, x^2)` above. But, how do you relate A to the value of $y(0)$? We know $y(0)$ in this case is equal to 0, not 1.

I think the problem is that his `integral_aTOb` is not = 1/3, but something else, like 10. Therefore the $y(0)$ must not be 0 but must be greater than this, like 2.7234. I think he's looking for the *offset* of $y(0)$ that would make the area under the curve $x^2 = 10$ (or whatever). Wouldn't this be an addition $y(x)+A$, not multiplication $A*y(x)$?

Under JD's solution for the example here of $\text{integral_aTOb}(x^2) = 10$:

$$A * \int_0^1 (x^2 dx) = 10$$
$$A * (1^3/3 - 0^3/3) = 10$$
$$A * 1/3 = 10$$
$$A = 30$$

Again, I don't see it how this value relates to the value of y at $x=0$?

Sorry, just getting curious/

john

"JD Smith" <jdsmith@astro.cornell.edu> wrote in message
news:3BD9C768.8F4A8721@astro.cornell.edu...

>

> $\int Ay(x) dx = A \int y(x) dx$

>

> will guide the way.

>

> JD
