

Re: Looking for a simple function with known values

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William Elliot wrote:

On Mon, 20 Feb 2006, Anderson wrote:

do you see a simple increasing function with the following constraints:

$$f(0) = 0$$

$$f(1) = 1/2$$

$$f'(0) = \sqrt{2}/2$$

$$f'(1) = \log(2)/2$$

No. As $\log 2$ and $\ln 2$ are negative, f cannot be increasing at 1.

Um, $\ln(2) = 0.6931$

In answer to the original question:

Consider a cubic $f(x) = a_3 x^3 + a_2 x^2 + a_1 x + a_0$.

$$f(0) = a_0.$$

$$f(1) = a_3 + a_2 + a_1 + a_0$$

$$f'(0) = a_1$$

$$f'(1) = 3 a_3 + 2 a_2 + a_1$$

a_0 and a_1 are given immediately by your conditions.

You can easily solve for a_2 and a_3 .

There is nothing to guarantee that such an interpolating cubic has to be an increasing function, but in this case it is.

– Randy

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