
Subject: Re: Inverse Hyperbolic Tangent
Posted by [notspecified](#) on Wed, 18 Dec 2002 13:39:15 GMT
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On Wed, 18 Dec 2002 13:26:18 -0000, "p.pall" <p.pall@atm.ox.ac.uk> wrote:

> Hi,
>
> Does anyone out there know how to compute INVERSE hyperbolic tangent in IDL
> 5.5?
>
> An 'Atanh' function does not appear to exist.
>

How about using complex numbers? According to Abramowitz and Stegun 4.6.16,

$$\operatorname{Arctanh}(z) = -i \operatorname{Arctan}(iz)$$

Matt Feinstein does not include his email address
in the text of usenet postings.

Harvard Law of Automotive Repair: Anything that goes away
by itself will come back by itself.

Subject: Re: Inverse Hyperbolic Tangent
Posted by [Patrick L. Nolan](#) on Wed, 18 Dec 2002 18:29:20 GMT
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p.pall <p.pall@atm.ox.ac.uk> wrote:

> Does anyone out there know how to compute INVERSE hyperbolic tangent in IDL
> 5.5?
>
> An 'Atanh' function does not appear to exist.
>
> Does this mean I'll have to mess about with series expansions?

This one is easy to do on paper.

If $y = \operatorname{atan}(x)$,
then $x = .5 * \ln((1+y)/(1-y))$

Of course you need to worry about singular behavior at
the boundaries and the possibility of invalid y values.

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* Patrick L. Nolan *
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* Stanford University *
