Subject: Curl, Gradient and Divergence
Posted by AleDiPappa on Fri, 04 Apr 2008 10:49:32 GMT
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I am new idl user and I would like to know if there is any easy way or
direct function for computing the curl, gradient and divergence of
vectorial fields.

Regards

Subject: Re: Curl, Gradient and Divergence
Posted by Kenneth P. Bowman on Fri, 04 Apr 2008 13:33:26 GMT
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In article
<833f085f-3c70-41c3-aa28-7a1927e44d0c@m73g2000hsh.googlegroups.com>,
 AleDiPappa@gmail.com wrote:

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> direct function for computing the curl, gradient and divergence of
> vectorial fields.
>
> Regards

To my knowledge there are no general built-in routines to do this;
you need to roll your own. But, it is relatively easy to do by using
the SHIFT operator, e.g., the gradient of a 2-D scalar field psi using
centered differences on a regular Cartesian grid is

```
grad_x = (SHIFT(psi, -1,  0) - SHIFT(psi, 1, 0))/(2 * dx)
grad_y = (SHIFT(psi,  0, -1) - SHIFT(psi, 0, 1))/(2 * dy)
```

Don't forget to clean up the boundaries.

Ken Bowman