

Re: bound on eigenvalues...

Source: <http://sci.tech--archive.net/Archive/sci.math/2005-12/msg01677.html>

- *From:* "comtech" <comtech.usa@xxxxxxxxxx>
 - *Date:* 7 Dec 2005 12:42:09 -0800
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Robert Low wrote:

> José Carlos Santos wrote:

>> The eigenvalues are the roots of the characteristic polynomial, which is
>> $P(x) = -x^3 + ax^2 + bx + c$, with $a = 0.501$, $b = -0.024089$, and
>> $c = 0.0000524046$. Since it's a third degree polynomial, it can't have
>> more than three roots. Now, since $P(0) = 0.0000524046$, $P(0.05) =$
>> -0.0000245449 , $P(0.1) = 0.00165351$, $P(0.4) = 0.00657681$, and $P(0.5) =$
>> -0.0117421 , there must be a root between 0 and 0.1, a second one between
>> 0.1 and 0.4, and a third one between 0.4 and 0.5. This proves that all
>> roots are smaller than 0.5.

>

> But I think he *meant* to write that there must be a root
> between 0 and 0.05, a second one between 0.05 and 0.1,
> and a third one between 0.4 and 0.5, since that's how the
> sign changes go.

But these approaches look like numerical... it is perfectly OK for
practice ... but here we need analytical methods...

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• *Follow-Ups:*

- ◆ [**Re: bound on eigenvalues...**](#)
◇ *From:* Robert Low

• *References:*

- ◆ [**bound on eigenvalues...**](#)
◇ *From:* comtech
- ◆ [**Re: bound on eigenvalues...**](#)
◇ *From:* José Carlos Santos
- ◆ [**Re: bound on eigenvalues...**](#)
◇ *From:* Robert Low

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Re: bound on eigenvalues...

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