

# Determinants of multi-dimensional matrices

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- *From:* "Tero" <tero13@xxxxxxxx>
  - *Date:* 1 Dec 2005 16:41:51 -0800
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Hi there. I study Electrical Engineering (first year), and I am being bothered by by Linear Algebra issues lately. One of them is the three-(or more)-dimensional matrices. In Linear Algebra lessons, we only have to deal with two-dimensional matrices, but, in fact, there is no limitation in the number of dimensions, it could be anything. Yet, all definitions we have learnt are designed for two-dimensional matrices. One of them is the determinant. I am trying to discover on my own, how to compute the determinant of a  $N \times N \times N$  matrix, but I am baffled. Maybe I should ask if there IS such a thing as determinant of a three-dimensional matrix.

Another one is the multiplication of three-dimensional matrices. All clear on how to multiply an  $M \times N$  with an  $N \times K$  matrix. But what about three dimensional matrices? No clue at all...

Tero

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- *Follow-Ups:*
  - ◆ ***Re: Determinants of multi-dimensional matrices***  
◇ *From:* carlos
  - ◆ ***Re: Determinants of multi-dimensional matrices***  
◇ *From:* carlos
  - ◆ ***Re: Determinants of multi-dimensional matrices***  
◇ *From:* Michael Stemper
  - ◆ ***Re: Determinants of multi-dimensional matrices***  
◇ *From:* Lee Rudolph
- Prev by Date: ***Re: Well Ordering the Reals***
- Next by Date: ***Re: Well Ordering the Reals***
- Previous by thread: ***Problem***
- Next by thread: ***Re: Determinants of multi-dimensional matrices***
- Index(es):
  - ◆ ***Date***
  - ◆ ***Thread***