

MATH 160/260

For a general introduction to the following topics, visit the indicated sites. (NOTE: the links branch out into further detailed subtopics and some links merge other topics as well.)

From **KHAN ACADEMY**: <http://www.khanacademy.org/math/algebra/#algebra-matrices>

For **Math 160**, available topics on the website above are (among others):

1. Introduction to matrices
2. Matrix multiplication
3. Inverting matrices
4. Solving system of equations
5. Singular matrices
6. Reduced row echelon form
7. Vector products
8. Null and column space
9. Null space and linear independency

From **KHANACADEMY**: <http://www.khanacademy.org/math/linear-algebra/#math/linear-algebra>

For **Math 260** (and certain Math 160 topics) available topics on the website above are (among others):

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|---------------------------------------|-------------------------------------------|
| 1. Introduction to matrices | 15. |
| 2. Matrix multiplication | 16. Linear and vector transformation |
| 3. Singular matrix | 17. Kernel |
| 4. Introduction to vectors | 18. Projection |
| 5. Parametric representation of lines | 19. Invertibility and inverses |
| 6. Linear combination and span | 20. Determinants (2x2, 3x3, 4x4, nxn) |
| 7. Linear independency | 21. Upper triangular determinant |
| 8. Subspaces | 22. Transpose (sum, inverses, of vectors) |
| 9. Vector length and dot products | 23. Orthogonal complements |
| 10. Cauch-Schwartz Inequality | 24. Rank |
| 11. Triangular Inequality | 25. Gram-Schmidt Process |
| 12. Cross products | 26. Eigenvalues and Eigenvectors |
| 13. Reduced row echelon form | |
| 14. Null space | |

From MIT OPEN COURSEWARE: Click on the links to navigate to the relevant topics at MIT open courseware.

- matrices, solving systems of linear equations and vector spaces
<http://ocw.mit.edu/courses/mathematics/18-06sc-linear-algebra-fall-2011/ax-b-and-the-four-subspaces/>
- determinants, eigenvalues and orthogonality

<http://ocw.mit.edu/courses/mathematics/18-06sc-linear-algebra-fall-2011/least-squares-determinants-and-eigenvalues/>

- similar matrices, change of basis, linear transformations and Jordan form

<http://ocw.mit.edu/courses/mathematics/18-06sc-linear-algebra-fall-2011/positive-definite-matrices-and-applications/similar-matrices-and-jordan-form/>

OTHER RECOMMENDED LINKS

The following links navigate to a sequence of older lectures on linear algebra from MIT open coursewares youtube channel listed in order from first to last:

http://www.youtube.com/watch?v=KvQkRX1nIqQ&list=PLD971E94905A70448&index=13&feature=plpp_video

http://www.youtube.com/watch?v=anICA1XFJ_M&list=PLD971E94905A70448&index=14&feature=plpp_video

http://www.youtube.com/watch?v=I59IX58Wce8&list=PLD971E94905A70448&index=15&feature=plpp_video

http://www.youtube.com/watch?v=6UXba5MKsfc&list=PLD971E94905A70448&index=16&feature=plpp_video

http://www.youtube.com/watch?v=CEbrxYGpfZY&list=PLD971E94905A70448&index=17&feature=plpp_video

http://www.youtube.com/watch?v=Bk9SZMsPEHk&list=PLD971E94905A70448&index=18&feature=plpp_video

http://www.youtube.com/watch?v=anA3P9McG5Y&list=PLD971E94905A70448&index=19&feature=plpp_video

http://www.youtube.com/watch?v=ZYf0tz9oVz8&list=PLD971E94905A70448&index=20&feature=plpp_video