ACE Study Guide – MATH 1314

Syllabus:

To search for your course syllabus, follow these instructions.

1. Visit the following website: https://info.tamiu.edu/
2. Input your course (ex: MATH 1314) into the "Search" box and make sure you are in the current term (ex: Spring 2022). Click "Search."
3. Scroll down until you find your specific course (ex: MATH 1314.201) and professor's name.
4. Click on "Syllabus" under your course and the file will automatically download. You are done!

Textbook:

Math 1314, College Algebra Publish Date: February 13, 2015 Digital: ISBN-10: 1-947172-12-3 & ISBN-13: 978-1-947172-12-8 College Algebra by OpenStax College (together with WebAssign) https://openstaxcollege.org/textbooks/college-algebra

Key Concepts:

- Polynomials I and Polynomials II
- Square Method when A = 1
- Conic Sections
- Binomial Theorem
- Logarithm Rules and Exponent Rules
- Sequences and Series
- Matrices

- Factoring Trinomials
- Quadratic Formula
- Systems of Linear Equations – Two Variables
- Systems of Linear Equations – Three Variables

Tips and Strategies:

- Practice, practice, practice!
- Attend S.I. Sessions.
- Take practice tests.

- Take notes and keep organized.
- Utilize office hours.
- Visit ACE – Academic Support.

Resources:

- Introduction to Ellipses
- Systems of 3 Variables
- Multiplying Matrices

- ACE – Academic Support Tutoring
- My Academic Achievement Plan

Practice and Application:

Below are practice problems to reinforce your knowledge of key course concepts.

General Form:	Practice Problem:
$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \times \begin{bmatrix} e & f \\ g & h \end{bmatrix} = \begin{bmatrix} ae+bg & af+bh \\ ce+dg & cf+dh \end{bmatrix}$$ A B C A, B and C are square metrices of size N x N a, b, c and d are submatrices of A, of size N/2 x N/2 e, f, g and h are submatrices of B, of size N/2 x N/2	$$\begin{bmatrix} -1 & 4 \\ 2 & 3 \end{bmatrix}\begin{bmatrix} 9 & -3 \\ 6 & 1 \end{bmatrix} = \begin{bmatrix} (-1)(9)+4(6) & (-1)(-3)+(4)(1) \\ 2(9)+3(6) & 2(-3)+3(1) \end{bmatrix}$$ $$= \begin{bmatrix} 15 & 7 \\ 36 & -3 \end{bmatrix}$$ **Final answer**

MATH 1314 Final Exam Review: Click on the link to access the final exam review for College Algebra. Many similar example problems included in this review may appear on the final exam.

Disclaimer:

- Please use this document as a guide. You must follow class instructions and expectations set by your professor.
  - This guide does not substitute your class
  - This guide does not cover the entire syllabus or course

Math Videos:

1. Midpoint of the line segment: https://www.youtube.com/watch?v=Ez_-RwV9WVo
2. Distance formula: https://www.youtube.com/watch?v=nyZuite17Pc
3. Equation of the line that passes through 2 points:
   https://www.youtube.com/watch?v=LtpXvUCrgrM
   https://www.youtube.com/watch?v=9hryH94KFJA
4. Equation of a circle with center and radius:
   https://www.youtube.com/watch?v=orsicAAeuT0
5. Symmetry from an equation: https://www.youtube.com/watch?v=59s_CQjTD6w
6. Domain: https://www.youtube.com/watch?v=-DTMakGDZAw
7. Function as even, odd, or neither: https://www.youtube.com/watch?v=8VgmBe3ulb8
8. Standard form equation from a graph:
   https://www.youtube.com/watch?v=vAPPYoBV2Ow&t=295s
9. Equation of the ellipse given center and vertices:
   https://www.youtube.com/watch?v=_JrQF8Rkaio,
   https://www.youtube.com/watch?v=lvAYFUIEpFI
10. Composite equations: https://www.youtube.com/watch?v=wUNWjd4bMmw
11. Addition of functions: https://www.youtube.com/watch?v=n34dqyVCXs4
12. Graph

    a. Finding the vertex of a parabola: https://www.youtube.com/watch?v=IbI-l7mbKO4

    b. Equation of the axis of symmetry: https://www.youtube.com/watch?v=dfoXtodyiIA

    c. Domain and range: https://www.youtube.com/watch?v=za0QJRZ-yQ4&t=396s

13. Domain: https://www.youtube.com/watch?v=kAqaPxusaDg

14. Domain: https://www.youtube.com/watch?v=9BHPsRXRAkY

15. Inverse functions: https://www.youtube.com/watch?v=W84lObmOp8M , https://www.youtube.com/watch?v=KzaPBzFFLRM

16. Find the inverse: https://www.youtube.com/watch?v=VzWxvDe8TUQ

17. Simplifying logs: https://www.youtube.com/watch?v=Z5myJ8dg_rM

18. Graphing inverse functions: https://www.youtube.com/watch?v=W84lObmOp8M&t=16s

19. Log to exponential function: https://www.youtube.com/watch?v=9SOSfRNCQZQ

20. Graph an exponential function: https://www.youtube.com/watch?v=gEvzzf0G0vg

21. Simplifying and solving logarithmic expressions: https://www.youtube.com/watch?v=hwZP265NK0I

22. System of linear equations – word problems: https://youtu.be/gRntusF_tVI

23. Writing equations of perpendicular lines: https://youtu.be/TsEhZRT16LU

24. Dividing expressions with imaginary numbers: https://www.youtube.com/watch?v=4D3l652MH3w

25. Writing five terms of a sequence given explicit formula: https://www.youtube.com/watch?v=20fTQQrMpQM

26. General formula of arithmetic sequences: https://www.youtube.com/watch?v=UPvyQV6wZQw

27. Polynomial Function from a Graph w/ Least Possible Degree: https://www.youtube.com/watch?v=2TraNpDuXyg

28. Long division (polynomials): https://youtu.be/FXgV9ySNusc

29. Finding a specific term in the binomial expansion: https://www.youtube.com/watch?v=xaA9-tdxSAE

30. Finding the sum or an arithmetic series using summation notation: https://www.youtube.com/watch?v=gwKocfP60AI

31. Expressing Log functions as a sum or a difference https://www.youtube.com/watch?v=KeuZ5gvXpX0

32. Solving system of equations (2 variables) – elimination by addition: https://youtu.be/vA-55wZtLeE

33. Solving system of equations (3 variables) – elimination by addition: https://youtu.be/f7cX-Ar2cEM

34. Solving linear equations – word problems: https://youtu.be/DxSmZ0MDSxM

35. Row reducing a matrix: https://www.youtube.com/watch?v=9LYVi-n-6Jw