Comprehensive Final Review

Friday, December 11, 2020 12:36 PM

Objective:
- Cover the key topics from each chapter
- Answer any logistical questions regarding the course and final
- Answer conceptual questions

Announcements:
- Schedule the **oral final exam** with your TA ASAP if you have not done so. The deadline to take it is **12/16 at 5pm**
- The **MOLS final exam** will be released 12/16 at 8am and is due **12/17 at 3pm**
- The **written final exam** must be taken on **12/17 from 12pm-3pm on Zoom**

Finals FAQs:
How long is the final?
MOLS final is 20 questions.

The written final will not be as long as the practice final posted on Canvas. We do not expect the written final to take the full 3 hours, but the time is there for anyone who wants/needs it.

What topics are on the final?
Advanced topics are NOT on the final exam. All other topics are fair game.

What resources can I use?
All parts of the final are open notes, textbook, calculator, and if you've made one, formula sheet. You are NOT allowed to consult with any other person. If you have questions, please reach out to your TA.

Ch1: Basic Trig Properties

Key Words/Concepts: sin, cos, tan, opposite, adjacent, hypotenuse, radians, degrees, unit circle

Ex: If cos A = -2/3, find the five other trig functions.

Ex: Evaluate tan(-11π / 4)

Ch2: Wave graphs

Key Words/Concepts: period / wavelength, frequency, amplitude, phase shift

Ex: Write an equation for a sine or cosine graph

Ch3: Inverses & Formulas

Key Words/Concepts: Restricting range, inverse trig functions (e.g., arcsin, arccos, arctan), well-defined, angle sum, angle difference, double angle formulas, verifying trig identities

Ex: Evaluate sin(arccos 3/5 - arctan -1/4)

Ex: Evaluate arcsin(sin 315°)

Ex: Find the cos(75°)

Ex: Find all angles such that cos(3A) = -1/2

Ch4: Solving Non-Right Triangles

Key Words/Concepts: Law of Sines, Law of Cosines, base, height, area of a triangle, "as a function of," substitution, triangle types (e.g., SSA, SSS, AAA, etc.), Pythagorean theorem

Ex: Fill in the missing sides and angles of the following triangle…

Ch5: Vectors

Key Words/Concepts: vectors, polar coordinates, Cartesian coordinates, adding/subtracting vectors, magnitude, direction

Ex: Convert (x,y) = (-8,2) to polar coordinates

Ex: What is u+v if u = <3,4> and v = <-1,2>?

Ex: A boat travels 30km in the direction of 32°, then turns and travels… How far is the boat from its initial location and at what angle?

Ch6: Conics & Completing the Square

Key Words/Concepts: circle, ellipse, parabola, vertex, center, radius, completing the square, perfect square, distributing, factoring

Ex: What is the center and radius of the circle with equation (x-5)^2 + (y+4)^2 = 25?

Ex: Write the parabola y = -2x^2 + 10x - 22 in standard form (y -k = a(x-h)^2) by completing the square

Ch7: Solving Systems of Equations

Key Words/Concepts: linear systems, nonlinear systems, elimination, substitution, graphing, point of intersection, number of solutions

Ex: Find the solution(s) (if any exist) of

$2y + 6x = -8$
$4y - 5x = 1$

Ch8: Sequences / Series / Binomial Theorem

Key Words/Concepts: arithmetic, geometric, sigma notation, summation, infinite, Pascal's triangle, combinations, permutations

Ex: Expand $(x+y)^5$