20094-MTH 105-02

ALGEBRA and TRIGONOMETRY

Spring 2018

MTWF 11:30 – 12:30

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2. Reviews for tests 1 – 7

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SYLLABUS

Math 105: Algebra and Trigonometry

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Web page: http://faculty.ccp.edu/FACULTY/akitover (syllabus and all the reviews with solutions are available on the web page)

Office Hours: Monday, Wednesday, 10:15 a.m.– 11:15 a.m., or by appointment.

(Help is also available in the Math Skills Lab, located in Room 23 of the Annex.)

Textbook: Algebra and Trigonometry, (13th Edition) by Swokowski and Cole.

Technology: you will need a scientific calculator for this course.

Class meets: Monday, Tuesday, Wednesday, and Friday, 11:30 - 12:30.

COURSE OUTLINE

Part 1 Linear and quadratic functions. Sections 3.3 and 3.6

(a) Linear functions $y = ax + b$. The meaning of the coefficients a (the slope) and b (the y-intercept). Graphing linear functions.

(b) Compositions and inverses of linear functions. Symmetry between the graphs of a linear function and its inverse.

(c) Quadratic functions. The standard form. The vertex. The range. The quadratic formula.

(d) Graphs of quadratic functions

(e) The inverse of a quadratic function with restricted domain. Graphs of inverse functions.

(f) Applications of quadratic functions.

Review 1

Test 1 (50 points)

Part 2 Equations. Sections 2.3 – 2.5, 4.2 – 4.4

(a) Complex numbers

(b) The main theorem of algebra. The synthetic division. The factor and remainder theorems.

(c) Quadratic equations and equations reducible to them.

(d) Rational roots test.

(e) Approximating solutions of polynomial equations by the method of halving intervals.

Review 2

Test 2 (50 points)

Part 3 General relations and functions. Sections 3.4, 3.7, and 5.1.

(a) Relations. The domain and the range of a relation. Inverse relations.

(b) When a relation is a function. Vertical line test.

(c) Compositions of functions. Inverse functions.

(d) Radical functions $\sqrt[n]{x}$ as inverses to power functions x^n.

Review 3

Test 3 (50 points)

Part 4 Polynomial and rational functions. Sections 4.1 and 4.5

(a) Graphs of completely factored polynomials.

(b) Polynomials of quadratic type $P(x) = ax^{2n} + bx^n + c$, their range, critical points, and graphs.

(c) Linear fractions $R(x) = \dfrac{ax + b}{cx + d}$, horizontal and vertical asymptotes, graphs. The inverse of a linear fraction.

(d) Rational functions of the form $R(x) = \dfrac{ax^2 + bx + c}{dx + e}$, slant asymptotes, range, critical points, and graphs.

(e) Completely factored rational functions

Review 4

Test 4 (50 points)

Part 5 Exponential and logarithmic functions. Sections 5.2 - 5.6

   (a) Exponential functions and their graphs. Number e. Logistic curve. Hyperbolic functions.

   (b) Logarithmic functions. Properties of logarithms. Graphs of logarithmic functions.

   (c) Exponential and logarithmic equations. Inverses of logistic and hyperbolic functions.

   (d) Exponential models of growth and decay.

Review 5

Test 5 (50 points)

Part 6 Basic trigonometric functions and their properties. Sections 6.1 – 6.7 and 7.6

   (a) Angles. The degree measure. The radian measure. Complementary and supplementary angles.

   (b) The definition of six basic trigonometric functions; their graphs.

   (c) Graphs of functions $a\sin(bx-c)$ and $a\cos(bx-c)$. Amplitude, period, and shift.

   (d) Graphs of functions
$$a\tan(bx-c), a\cot(bx-c), a\sec(bx-c) \text{ and } a\csc(bx-c)$$
.

   (e) Inverse trigonometric functions and their graphs.

Review 6

Test 6 (50 points)

Part 7 Analytic Trigonometry Sections 7.1 – 7.5.

    (a) Pythagorean identities; complementary angle identities; even and odd trigonometric functions.

    (b) Verifying trigonometric identities.

    (c) Addition and subtraction formulas, multiple angle formulas, product-to-sum and sum-to-product formulas.

    (d) Basic trigonometric equations $\sin x = a$, $\cos x = a$, and $\tan x = a$; general solutions; solutions in the interval $[0, 2\pi)$.

    (e) Solving trigonometric equations.

Review 7

Test 7 (50 points)

Review for the final exam

Cumulative final exam (100 points)

Grading

I will drop the lowest of the seven test grades. If you miss a test without a valid excuse I will consider it as the lowest grade test.

Grade for the final will not be dropped.

The homework consists of seven parts. Each part is due on the day of the corresponding test. The first six parts are worth 14 points each and the last part is worth 16 points.

The total weight of the homework is 100 points.

A: 475 – 500 points

A-: 450 – 474 points

B+: 425 – 449 points

B: 400 – 424 points

B-: 375 – 399 points

C+: 350 – 374 points

C: 325 – 349 points

C-: 300 – 324 points

D: 275 – 299 points

F: 0 – 274 points

Attendance:

I will take attendance every day, since I view attendance as important. For every 3 classes missed for an unexcused absence, I will decrease your course grade by 1/3 of a letter grade.

Class Rules:

(a) No food is allowed in the class room.

(b) You may not use electronic devises in the classroom for any purposes not related to the class work (texting, browsing, et cetera).

(c) Cell phones must be put in vibration mode. You may not use cell phones during a test unless you use your phone as a calculator.

(d) Lateness is strictly discouraged. If you are late 10 minutes or more I will consider it as an absence. Please refrain from going out of the class room during the class time. It distracts other students. If it is necessary for you to leave early let me know before the class starts.

HOMEWORK

Part	Page	Problems
1	163	62
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