LSU Dual Enrollment Program for Math
Math 1022 Trigonometry COURSE PROFILE 6-1-2024

LA BOARD OF REGENTS COMMON COURSE NUMBER: CMAT 1223 Trigonometry
ETEXT: *Algebra & Trigonometry with Interactive Assessments, 4e, MyLab Math*, Kirk Trigsted
HIGH SCHOOL COURSE CODE: 160501

CHAPTERS
6 – An Introduction to Trigonometry
7 – The Graphs of Trigonometric Functions
8 – Trigonometric Identities, Formulas, and Equations
9 – Applications of Trigonometry
10 – Polar Equations, Complex Numbers, and Vectors

The number in parentheses indicates the number of homework exercises on that topic in MyLab Math.

Chapter 6: An Introduction to Trigonometric Functions

Section 6.1 An Introduction to Angles: Degree and Radian Measure (48)

- Understand degree measure
- Understand radian measure
- Convert between degree measure and radian measure
- Find coterminal angles using degree measure
- Find coterminal angles using radian measure

Section 6.2 Applications of Radian Measure (18)

- Determine the area of a sector of a circle
- Determine the arc length of a sector of a circle

Section 6.3 Triangles (18)

- Classify triangles
- Use the Pythagorean Theorem
- Understand similar triangles
- Understand the special right triangles

Section 6.4 Right Triangle Trigonometry (44)

- Understand the right triangle definitions of the trigonometric functions
- Use the special right triangles
- Understand the fundamental trigonometric identities
- Understand cofunctions
- Evaluate trigonometric functions using a calculator

Section 6.5 Trigonometric Functions of General Angles (73)

- Understand the four families of special angles
- Understand the definitions of the trigonometric functions of general angles

Find the values of the trigonometric functions of quadrantal angles
Understand the signs of the trigonometric functions
Determine reference angles
Evaluate trigonometric functions of angles belonging to the $\frac{\pi}{3}$, $\frac{\pi}{4}$, and $\frac{\pi}{6}$ families

Section 6.6 The Unit Circle (12)

Understand the definition of the unit circle
Understand the unit circle definitions of the trigonometric functions

Chapter 7: The Graphs of Trigonometric Functions

Section 7.1 Graphs of Sine and Cosine Functions (45)

Understand the graph of the sine function and its properties
Understand the graph of the cosine function and its properties
Determine properties and sketch graphs of the form $y = A\sin x$ and $y = A\cos x$
Determine properties and sketch graphs of the form $y = \sin Bx$ and $y = \cos Bx$
Determine properties and sketch graphs of the form $y = A\sin Bx$ and $y = A\cos Bx$
Determine the equation of a function of the form $y = A\sin Bx$ and $y = A\cos Bx$ given its graph

Section 7.2a More on the Graphs of Sine and Cosine: Phase Shift (21)

Determine properties and sketch graphs of the form $y = \sin(x - C)$ and $y = \cos(x - C)$
Determine properties and sketch graphs of the form $y = A\sin(Bx - C)$ and $y = A\cos(Bx - C)$

Section 7.2b More on the Graphs of Sine and Cosine: Vertical Shift (15)

Determine properties and sketch graphs of the form $y = A\sin(Bx - C) + D$ and $y = A\cos(Bx - C) + D$

Section 7.3 Graphs of Tangent, Cotangent, Cosecant, and Secant Functions (34)

Understand the graph of the tangent function and its properties
Determine properties and sketch graphs of the form $y = A\tan(Bx - C) + D$
Understand the graph of the cotangent function and its properties
Determine properties and sketch graphs of the form $y = A\cot(Bx - C) + D$
Understand the graphs of the cosecant and secant functions and their properties

Section 7.4 Inverse Trigonometric Functions I (35)

Understand and find the exact and approximate values of the inverse sine function
Understand and find the exact and approximate values of the inverse cosine function
Understand and find the exact and approximate values of the inverse tangent function

Section 7.5 Inverse Trigonometric Functions II (38)

Evaluate composite inverse trigonometric functions of the form $f\left(f^{-1}(x)\right)$ and $f^{-1}\left(f(x)\right)$
Evaluate composite inverse trigonometric functions of the form $f\left(g^{-1}(x)\right)$ and $f^{-1}\left(g(x)\right)$

Chapter 8: Trigonometric Identities, Formulas, and Equations

Section 8.1 Trigonometric Identities (33)

Review and use the fundamental identities
Verify trigonometric identities

Section 8.2 The Sum and Difference Formulas (35)

Use the sum and difference formulas for the cosine function
Use the sum and difference formulas for the sine function
Use the sum and difference formulas for the tangent function
Use sum and difference formulas to evaluate expressions involving inverse trig functions

Section 8.3 The Double-Angle and Half-Angle Formulas (46)

Use the double-angle formulas
Use the half-angle formulas
Use the double-angle and half-angle formulas to evaluate expressions involving inverse trig functions

Section 8.5 Trigonometric Equations (43)

Solve trigonometric equations that are linear in form
Solve trigonometric equations that are quadratic in form
Solve trigonometric equations using identities
Solve trigonometric equations using a calculator

Chapter 9: Applications of Trigonometry

Section 9.1 Right Triangle Applications (16)

Solve right triangles
Solve applied problems using right triangles

Section 9.2 The Law of Sines (29)

Determine if the Law of Sines can be used to solve an oblique triangle
Use the Law of Sines to solve the SAA case or the ASA case
Use the Law of Sines to solve the SSA (ambiguous) case
Use the Law of Sines to solve applied problems involving oblique triangles

Section 9.3 The Law of Cosines (22)

Determine whether Law of Sines or Cosines should be used to solve an oblique triangle
Use the Law of Cosines to solve the SAS case
Use the Law of Cosines to solve the SSS case
Use the Law of Cosines to solve applied problems involving oblique triangles

Section 9.4 Area of Triangles (19)

Determine the area of oblique triangles
Use Heron's Formula to determine the area of an SSS triangle
Solve applied problems involving the area of triangles

Chapter 10: Polar Equations, Complex Numbers, and Vectors

Section 10.1 Polar Coordinates and Equations (62)

Plot points using polar coordinates

Determine different representations of a point (r,θ)

Convert from polar to rectangular coordinates

Convert from rectangular to polar coordinates

Convert equations from rectangular to polar form

Convert equations from polar to rectangular form

Section 10.2 Graphs of Polar Equations (67)

Sketch equations of the form $r\cos\theta = a$, $r\sin\theta = a$, $ar\cos\theta + br\sin\theta = c$, and $\theta = a$

Sketch equations of the form $r = a$, $r = a\sin\theta$, and $r = a\cos\theta$

Sketch equations of the form $r = a + b\sin\theta$ and $r = a + b\cos\theta$

Sketch equations of the form $r = a\sin(n\theta)$ and $r = a\cos(n\theta)$

Sketch equations of the form $r^2 = a^2\sin(2\theta)$ and $r^2 = a^2\cos(2\theta)$

Section 10.4 Vectors (31)

Determine magnitudes of vectors that are represented geometrically

Perform operations on vectors that are represented geometrically

Determine components and magnitudes of vectors

Write vectors in terms of **i** and **j**

Perform operations on vectors written in $a\mathbf{i} + b\mathbf{j}$ form and find magnitudes

Find unit vectors

Determine direction angles of vectors

Write vectors in the form $\mathbf{v} = a\mathbf{i} + b\mathbf{j}$ given magnitudes and direction angles

Solve applied problems involving velocity using vectors