

LSU Dual Enrollment Program for Math

Math 1022 Trigonometry COURSE PROFILE 9-23-2026

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 special right triangles to evaluate trigonometric expressions.

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

Find trigonometric function using a given value of another function value

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

Find values of the trigonometric functions given a point that lies on the graph of the unit circle

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 $f(f^{-1}(x))$ and $f^{-1}(f(x))$

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

Chapter 8: Trigonometric Identities, Formulas, and Equations

Section 8.1 Trigonometric Identities (33)

Review and use the fundamental trigonometric 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 trigonometric 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 trigonometric 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 $r^2 = a^2 \cos(2\theta)$
- Identify types of graphs of polar equations.

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 $\mathbf{i}$ and $\mathbf{j}$
- 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