



Algebra II Pacing & Assessment Guide

JMCSS DEPARTMENT OF CURRICULUM & INSTRUCTION

Unit IX – Trigonometric Functions

Description: Students are introduced to periodic functions and define three trigonometric functions: $y = \sin \alpha$, $y = \cos \alpha$ and $y = \tan \alpha$. Students learn to transform these functions just as they have transformed other types of functions. The parameter that affects the period of these functions is explored. Radians are introduced in connection to circular functions and trigonometric functions. By the end of this unit, students will have a conceptual understanding of how these functions are generated and used to model various situations.

Domain	Tennessee State Standards	Assessed on TNReady	
		Part I	Part II
Reason Quantitatively and use Units to Solve Problems (Q.A)	N-Q.A.2. Define appropriate quantities for the purpose of descriptive modeling	X	X
Interpret Functions that Arise in Applications in Terms of the Context (IF.B)	F-IF.B.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★	X	X
	F-IF.B.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. ★	X	X
Analyze Functions using Different Representations (IF.C)	F-IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. e.) Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	X	X
	F-IF.C.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	X	X
Build New Functions from Existing Functions (BF.B)	F-BF.B.3. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	X	X



Algebra II Pacing & Assessment Guide

JMCSS DEPARTMENT OF CURRICULUM & INSTRUCTION

Extend the Domain of Trigonometric Functions using the Unit Circle (TF.A)	F-TF.A.1. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.		X
	F-TF.A.2. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.		X
Model Periodic Phenomena with Trigonometric Functions (TF.B)	F-TF.B.5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.★		X
Prove and Apply Trigonometric Identities (TF.C)	F-TF.C.8. Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.		X