

Trigonometry

Instructional Focus: Graph and transform trigonometric functions

	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Symmetry and periodicity of trigonometric functions (F.TF.4)	Can extend thinking beyond the standard, including tasks that may involve one of the following: <ul style="list-style-type: none"> • Designing • Connecting • Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving 	Use the unit circle to explain symmetry (odd and even) of the six trigonometric functions. Use the periodicity of the unit circle to explain the repeated cycle of the graphs of all six trigonometric functions.	Use the unit circle to explain symmetry (odd and even) of the sine, cosine, and tangent functions. Use the periodicity of the unit circle to explain the repeated cycle of the graphs of sine, cosine, and tangent functions.	Use the unit circle to explain symmetry (odd and even) of the sine and cosine functions. Use the periodicity of the unit circle to explain the repeated cycle of the graphs of sine and cosine functions.	Little evidence of reasoning or application to solve the problem Does not meet the criteria in a level 1
Identify and Find Transformations (F.BF.3)		Identify the effect on a graph by replacing $f(x)$ with more than two transformations: $f(x) + k$, $k f(x)$, $f(kx)$, $f(x + k)$ for specific positive and negative values of k Given the graph of a function and more than two transformations, find the values of the constants and coefficients Given a partial graph, complete the graph for both even and odd functions	Identify the effect on a graph by replacing $f(x)$ with two transformations: $f(x) + k$, $k f(x)$, $f(kx)$, $f(x + k)$ for specific positive and negative values of k Given the graph of a function and two transformations , find the values of the constants and coefficients Recognize even and odd functions from graphs and equations	Identify the effect on a graph by replacing $f(x)$ with a single transformation: $f(x) + k$, $k f(x)$, $f(kx)$, $f(x + k)$ for specific positive and negative values of k Given the graph of a function and a single transformation , find the value of the constant or coefficient Recognize even and odd functions from graphs	
Identify key features of graphs (F.IF.7)		Graph trigonometric functions, and interpret all related key features of a graph in context of a real world situation. <ul style="list-style-type: none"> • asymptotes • period • midline • amplitude 	Graph trigonometric functions, and identify all related key features of a graph. <ul style="list-style-type: none"> • asymptotes • period • midline • amplitude 	Given the graph or equation of trigonometric functions, identify all related key features of a graph. <ul style="list-style-type: none"> • asymptotes • period • midline • amplitude 	

Graphing F.TF.4 (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.

F.BF.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.*

F.IF.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.