	Pine Hill Public Schools Curriculum								
Content Area: Mathematics									
Course Title	e/ Grade Level:	Trigonometry Pre-	rigonometry Pre-Calculus						
Unit 1:	Functions and Gra	phing Functions	Month:	September/October					
Unit 2:	Trigonometric Functions		Month:	October/November/ December					
Unit 3:	Applications of Tr	igonometry	Month:	January					
Unit 4:	Trigonometric Identities and Equations		Month:	January/February					
Unit 5:	Polynomial Functi	ons	Month:	February/March					
Unit 6:	Inequalities and Programming	Linear	Month:	April/May					
Unit 7:	7: Exponential and Logarithmic Functions		Month:	May/June					
Date Created or Revised: 05/10/12									
BOE Approval Date: 8		/28/12							

	Pine Hill Public Schools							
				Curri	culum			
Unit	Title: Fund	ctions and	l Graț	phing Functions			Unit i	#: 1
Cou	rse or Grad	e Level:	Trigo	onometry Pre Calculus	Length of Time: September to October (21 days)			ober (21 days)
Date	Created: 5	/10/12			BOE Approval Date:			
Paci	ng	 (1 day) -Introduction to Modeling, (1 days) The Real Number System, (1 day) The Cartesian Coordinate System, (2 days) Relations and Functions, (2 days) Algebra of Functions, (2 days) Quiz Review and Quiz, (2 days) Inverse Functions, (2 days) Absolute Value/Greatest Integer/Piecewise Functions, (2 days) Test Review and Test, (2 day) Reflections and Transformations, (2 days) Solving Quadratic and Polynomial Equations, (2 days) Quiz Review and Quiz 						
Esse	ntial	• Are gra	aphs u	seful in representing data and s	olving e	quations?		_
Que	stions	 What factors can be used to determine whether an analytic or graphical strategy is most advantageous in solving a problem? Why are relations and functions represented in multiple ways? How are the properties of functions and functional operations useful? 						
Con	tent	Plotting Function equations	Points is. Gra s grap	s. Domain and Range. Evaluatir aphing functions. Reflecting and hically and analytically.	g sums, l transfoi	differences, products, and c ming functions. Finding ro	quotien ots and	ts of functions. Inverse d solutions to quadratic
Skill	S	 Determine whether a given relation is a function. Determine the domain of range of any given function or relation. Perform operations with functions. Find composite functions. Find and recognize inverse functions. Graph linear equalities and inequalities with and without graphing calculators. Find the zeros of a linear function. Define the sum, difference, product, and quotient of functions. Form and evaluate composite functions. Define and graph special functions. Determine the symmetry of a graph. SWBAT use symmetry to sketch a graph. Graph functions using reflections in the x-axis, y-axis, and the line y=x. Graph functions 						
Asse	essments	• Summa • Format	ative: tive: T	Tests and benchmark Feacher observation, Classwork	Homew	rork		
Inter disci Com	r- plinary nections	• Scie	ence					
Less	on	• pers	onally	made worksheets				
reso Activ	urces / vities	 Asso Advo 	anced	Mathematics: A Pre-Calculus	Approac	h – Prentice Hall		
		<u> </u>		Common Core	State St	andards		
Gra	de or Conce	ptual Ca	tegor	y (HS only): Trigonometry	/Pre-C	alc		
Dom	ain (name a	and #): In	nterp	reting Function				
Clus	ter: Analyz	ze difformant	#	t. Standard:				
repr	esentations	umerent	F	F-IF-7.A and B				
	-			<u>21st Centu</u>	ry Ther	nes		
Global Awareness				Financial, Economic, Business, and Entrepreneuria Literacy	1	Civic Literacy		Health Literacy
				21 st Cent	ury Ski	lls		
Creativity and			Critical Thinking and Problem	1	Communication and		Information Literacy	

Innovation	Solving	Collaboration		
Media Literacy	ICT Literacy	Life and Career Skills		r Skills

		Pine Hill Pu	blic Schools			
		Curri	culum			
Unit Title: Trig	onometric Fu	unctions		Unit #: 2		
Course or Grad	e Level: Tri	gonometry Pre-Calculus	Length of Time: October to	December (41 days)		
Date Created: 5	/10/12		BOE Approval Date:			
Pacing(2 days) - Angles in the Coordinate Plane, (1 day) - Angle Measures in Degrees and Radians, (2 days) - Applications: Angular and Linear Velocity, (3 days) Circular Functions, (3 days) The Trigonometric Functions, (3 days) - Quiz Review and Quiz, (2 days) Functions of Special and Quadrantal Angles, (1 day) - Evaluating Trigonometric Functions, (3 days) - Fundamental Identities, (2 days) - Proving Trigonometric Identities, (3 days) - Test Review and Test, (2 days) - Graphs of the Sine and Cosine Functions, (2 days) - Period/Amplitude/and Phase Shift, (2 days) - Graphing other Trigonometric Functions, (2 days) - Quiz Review and Quiz, (3 days) - The Inverse Sine and Cosine Functions, (2 days) - Other Inverse Trigonometric Function (3 days) - Test Review and Test						
Essential Questions	How do triHow are the	igonometric and circular functions ne circular functions related to the	s model real-world problems and trigonometric functions?	their solutions?		
Content	Measurin Evaluatin fundamen	g angles in the coordinate plane. Ing and graphing (with transformation tal trigonometric identities. Harm	Unit conversions for angles. Angu- ions) trigonometric and inverse fu- nonic motion.	llar and linear velocity. Inctions. Proving the		
Skills	• Solve problems involving angular velocity and linear velocity. Define the sine and cosine functions. Evaluate the sine and cosine functions of an angle given a point on its terminal side. Define the trigonometric functions. Evaluate the trigonometric functions of angles. Find the six trigonometric functions of special angles and quadrantal angles. Solve problems involving percents. Introduce and prove the reciprocal, ratio, Pythagorean, and odd-even identities. Use the fundamental identities to prove other trigonometric identities. Graph sine and cosine functions. Find the amplitude, period, and phase shift of a sine or cosine functions from its equation. Graph a sine or cosine function with a given phase shift, period, and amplitude. Graph the tangent, cotangent, secant, and cosecant functions.					
Assessments	SummativeFormative	e: Tests and benchmark : Teacher observation, Classwork,	, Homework			
Inter- disciplinary Connections	Science	e, English				
Lesson resources / Activities	 persona Assorte Advance 	Illy made worksheets d resources found online ed Mathematics: A Pre-Calculus A	Approach – Prentice Hall			
		Common Core	State Standards			
Grade or Conce	ptual Categ	ory (HS only): Trigonometry	/Pre-Calc			
Domain (name a	Domain (name and #): Trigonometric Functions					
Cluster: Model	periodic	#. Standard:				
trigonometric fu	unctions	F-TF-5, 6, and 7				
Domain (name a	and #): Trig	onometric Functions				
Cluster: Extend	d the	#. Standard:				

domain of trigonometric		F-TF-1,2,3 and 4						
circle	e							
Dom	Domain (name and #): Interpreting Function							
Clust	ter: Analyze	#. Standard:						
functions using different		F-IF-7.E	F-IF-7.E					
repro	escittations							
		21 st Century	Then	nes				
	Global Awareness	Financial, Economic,		Civic Literacy		Health Literacy		
		Business, and Entrepreneurial						
1	21 st Century Skills							
	Creativity and	Critical Thinking and Problem		Communication and		Information Literacy		
	Innovation	Solving		Collaboration				
	Media Literacy	ICT Literacy		Life and	Caree	r Skills		

	Pine Hill Public Schools						
		Curri	culum				
Unit Title: Appl	ications of T	rigonometry		Unit #: 3			
Course or Grade	e Level: Tri	gonometry Pre-Calculus	Length of Time: January (1	2 days)			
Date Created: 5/	10/12		BOE Approval Date:				
Pacing	(1 days) - So Quiz Review and Test	olving Right Triangles, (1 day) - T v and Quiz, (2 days) -The Law of	he Law of Sines, (2 days) - The A Cosines, (1 day) - The Area of a T	Ambiguous Case, (2 days) - Friangle, (3 days) -Test Review			
Essential Questions	• How can we use trigonometric properties and laws to find values within a triangle? What are some situation where it would be useful to find a specific value in a triangle without actually measuring?						
Content	• Solving r	ight triangles. Law of Sines. Law	of Cosines. Area of a triangle.				
Skills	• Solve a right triangle given the measures of one angle and one side or the measure of two sides. Solve an isosceles triangle. Use the law of sines to solve a triangle when two angles and one side are given. Use the law of sines to solve a triangle when two sides and the opposite angle is given. Use the law of cosines to solve triangles. Find the area of a triangle given the measures of two sides and the included angle or one side and two angles. Find the area of a triangular segment of a circle given the radius of the circle and the central angle of the segment						
Assessments	 Summative: Tests and benchmark Formative: Teacher observation, Classwork, Homework 						
Inter- disciplinary Connections	Science						
Lesson resources / Activities	 persona Assorte Advance 	lly made worksheets d resources found online ed Mathematics: A Pre-Calculus A	Approach – Prentice Hall				
		Common Core S	State Standards				
Grade or Conce	ptual Categ	ory (HS only): Trigonometry					
Domain (name a	nd #): Simi	larity, Right Triangle, and T	rigonometry				
Cluster: Apply	1	#. Standard:					
trigonometry to	general	G-SRT-10, 11					
			• •				
Domain (name a	na #): Simi	larity, Right I riangle, and T	rigonometry				
Cluster: Define	tios, and	#. Standard:					
solve problems involving		G-SK1-6, / and 8					
right triangles.							
Domain (name a	nd #): Trig	onometric Functions					
Cluster: Prove a	and apply	#. Standard:					
trigonometric id	entities	F-TF-8, and 9					

21 st Century Themes									
Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy				
	21 st Centu	ry Ski	<u>lls</u>						
Creativity and	Critical Thinking and Problem		Communication and		Information Literacy				
Innovation	Solving		Collaboration						
Media Literacy	ICT Literacy		Life and Career Skills						

	Pine Hill Public Schools					
			Curr	iculum		
Unit	Title: Trig	onometri	c Identities and Equations			Unit #: 4
Cour	rse or Grad	e Level:	Trigonometry Pre-Calculus	Lengt	h of Time: January to l	February (19 days)
Date	Created: 5	/10/12		BOE	Approval Date:	
Pacin	ng	(3 days) - and Half- Solving T in Quadra	Sum and Difference Identities, (1 c Angle Identities, (2 days) - Product Frigonometric Equations and Inequa atic Form, (3 days) - Test Review ar	lay) - Ver /Sum Ide lities, (3 Id Test	rifying Identities Graphicall ntities, (2 days) Quiz Revie days) -Solving Trigonomet	y, (3 days) - Double-Angle ew and Quiz, (2 days) - ric Equations and Inequalities
Esser Ques	ntial stions	 How are How do represe 	e the six trigonometric and circular bes the recursive nature of the trigon entations?	functions ometric f	related to each other? functions affect their analyti	c values and graphical
Cont	tent	• Sum an half an Solvin	nd Difference identities for trigonor ngle identities for trigonometric func g trigonometric equations and inequ	netric fur tions. Pre alities.	actions. Verifying identities oduct and sum identities for	graphically. Double angle and trigonometric functions.
Skill	• Develop and use formulas for trigonometric functions of a sum and difference of two angle measures. Use a graphing utility to determine whether or note an equation is an identity. Develop and use the double-angle identities. Develop and use the half-angle identities. Develop and use product/sum identities. Develop and use product/sum identities. Solve trigonometric equations. Solve linear trigonometric inequalities. Solve guadratic trigonometric equations and inequalities.					
Asse	 Assessments Summative: Tests and benchmark Formative: Teacher observation, Classwork, Homework 					
Inter disci Com	- plinary nections	• Scier	nce			
Less	on	• perso	onally made worksheets			
resou Activ	urces / vities	 Asso Adva 	nced Mathematics: A Pre-Calculus	Approac	h – Prentice Hall	
			Common Core	State S	tandards	
Grad	le or Conce	ptual Cat	egory (HS only): Trigonometr	y		
Dom	ain (name a	and #): Tr	rigonometric Functions			
Clus	ter: Prove	and Appl	y #. Standard:			
Trig	onometric I	dentities	F-TF-8, 9			
			21 st Centu	iry The	nes	
Global Awareness Financial, Economic, Business, and Entrepreneurial Literacy Civic Literacy Health Literacy				Health Literacy		
			21 st Cent	ury Ski	<u>lls</u>	
	Creativit Innovat Media Lit	y and tion teracy	Critical Thinking and Problem Solving ICT Literacy	n	Communication and Collaboration Life and	Career Skills

	Pine Hill Public Schools						
			Curri	iculum			
Unit	Title: Po	lynomial Fu	nctions			Unit #: 5	
Cour	rse or Grad	e Level: Tri	gonometry Pre-Calculus	Length	n of Time: February to	March (24 days)	
Date	Created:			BOE A	Approval Date:		
Pacin	ng	(3 days) - Sy Functions, (2 (3 days) - Do Functions, (2	nthetic Division and the Remaind 2 days) - Integral and Rational Zer escartes' Rule/Intermediate Value 2 days) - Radical Functions, (4 da	der and Fa eros of Pol e Theoren ays) - Part	actor Theorems, (2 days) - lynomial Functions, (2 day n/Sum and Product of Zerc ial Fractions, (4 days) - Te	Graphs of Polynomial ys) - Quiz Review and Quiz, os, (2 days) - Rational est Review and Test	
Esser Ques	ntial stions	• How do ra	tional functions model real world	l problems	s and their solutions?		
Cont	tent	• Synthetic rational f	division. Graphing Polynomial fu unctions. Graphing and solving ra	unctions. adical fun	Intermediate value theoren ctions. Partial Fractions.	m for functions. Asymptotes	of
Skill	s	• Evaluate a polynomial for a given value of a variable using synthetic substitution. Divide a polynomial by first degree binomials using synthetic division. Prove and apply the remainder and factor theorems. Graph polynomial functions. Identify equations of polynomial functions from their graphs. Determine the rational zeros of a polynomial function. State and apply the Fundamental Theorem of Algebra. Apply theorems about the zeros of polynomial functions. Approximate zeros of polynomial functions. Determine asymptotes and points of discontinuity. Graph rational functions for a polynomial functions.					
Asse	ssments	 Summative: Tests and benchmark Formative: Teacher observation, Classwork, Homework Advanced Mathematics: A Pre-Calculus Approach – Prentice Hall 					
Inter disci Com	- plinary nections	Science					
Lesso resou Activ	on urces / vities	personaAssorted	lly made worksheets d resources found online				
			Common Core	State Sta	andards		
Grad	le or Conce	ptual Categ	ory (HS only): Trigonometry	ý			
Dom	ain (name a	and #): Inter	preting Function				
Clus	ter: Analyz	ze	#. Standard:				
funct	tions using esentations	different	F-IF-7.C				
ropr							
			<u>21st Centu</u>	ry Then	<u>nes</u>		
Global Awareness		areness	Financial, Economic, Business, and Entrepreneuria Literacy	ıl	Civic Literacy	Health Literacy	
			21 st Cent	ury Skil	ls		
	Creativit Innovat	y and tion	Critical Thinking and Problem Solving	n	Communication and Collaboration	Information Literac	y
Media Literacy		leracy	ICT Literacy		Life and	I CALEEL SKIIIS	

		Pine Hill Pu Curri	blic Schools culum		
Unit Title: Ine	qualities an	d Linear Programming		Unit #: 6	
Course or Grad	le Level: T	rigonometry Pre-Calculus	Length of Time: April to Ma	y (19 days)	
Date Created:	5/10/12		BOE Approval Date:		
Pacing	(1 day) - Sy Review and (2 days) - L Test	stems of Equations, (2 days) - Lin Quiz, (3 days) - Solving Polynom inear Programming, (2 days) - Ap	near Inequalities, (1 day) - Quadrati nial and Rational Inequalities, (3 da plications of Linear Programming,	c Inequalities, (2 days) - Quiz ys) - Systems of Inequalities, (3 days) - Test Review and	
Essential Questions	• How syste	ms of equalities and inequalities i	nodel real world problems and their	r solutions?	
Content	Systems optimiza	of equations and inequalities. Solvition.	ving quadratic, polynomial, and rati	onal inequalities. Linear	
Skills	 Solve linear systems of equations in two variables. Nonlinear systems of equations in two variables. Solve linear inequalities in one variable algebraically and graphically. Solve absolute value inequalities. Graph linear inequalities in two variables. Solve quadratic inequalities. Solve polynomial inequalities and graph the solutions. Solve rational inequalities and graph the solutions. Solve systems of inequalities in two variables graphically. 				
Assessments	 Summative: Tests and benchmark Formative: Teacher observation, Classwork, Homework Advanced Mathematics: A Pre-Calculus Approach – Prentice Hall 				
Inter- disciplinary Connections	• TBD				
Lesson resources / Activities	 Summa Forma Advance 	tive: Tests and benchmark tive: Teacher observation, C ed Mathematics: A Pre-Calculus	Classwork, Homework A <i>pproach</i> – Prentice Hall		
		Common Core	State Standards		
Grade or Conc	eptual Categ	ory (HS only): Trigonometry	7		
Domain (name	and #): Inte	rpreting Function			
Cluster: Analy	ze different	#. Standard:			
representations	s annor one	F-IF-7.D			
		<u>21° Centu</u>	ry Themes	TT 14 T'	
Global Awareness		Business, and Entrepreneuria	1	Health Literacy	
		21 st Cent	ury Skills		
Creativi Innova Media L	ty and ation iteracy	Critical Thinking and Problen Solving ICT Literacy	n Communication and Collaboration Life and	Information Literacy	

			Pine Hill Pu Curr	ıblic Sc iculum	hools	
Unit	Title: Exp	onential an	d Logarithmic Functions		τ	J nit #: 7
Cour	rse or Grad	e Level: Tr	igonometry Pre-Calculus	Lengt	h of Time: May to June	(20 days)
Date	Created:			BOE	Approval Date:	
Paci	ng	(1 day) - Ra Quiz Revie (3 days) - E	ational Exponents, (3 days) - Expo w and Quiz, (2 days) - Properties Exponential Growth and Decay Mo	onential F of Logar odels, (3 o	unctions, (4 days) - Logarith ithms, (2 days) - Exponenti days) - Test Review and Te	nmic Functions, (2 days) - al Equations and Inequalities, st
Esse Ques	ntial stions	 How do le How do e	ogarithmic functions model real-w xponential functions model real-w	vorld prot vorld prot	blems and their solutions? blems and their solutions?	
Cont	tent	Simplify Propertie and deca	ing expressions containing rational es of exponents and logarithms. So y.	al expone olving exp	nts. Graphs of logarithmic a ponential equations and inec	nd exponential functions. Jualities. Exponential growth
Skill	S	• Express lo logarithm equation	ogarithms in expanded form and ir ns to solve exponential equations. s and inequalities. Solve real worl	i condens Use a gra d problen	ed form. Solve equations in aphing calculator to solve ex as using exponential and log	volving logarithms. Use ponential and logarithmic arithmic equations.
Asse	 Assessments Summative: Tests and benchmark Formative: Teacher observation, Classwork, Homework Advanced Mathematics: A Pre-Calculus Approach – Prentice Hall 					
Inter disci Com	r- plinary nections	• Science	9			
Less resou Activ	on urces / vities	personAssorte	ally made worksheets ed resources found online			
			Common Core	State St	andards	
Grad	le or Conce	ptual Categ	gory (HS only): Trigonometry	y		
Dom	ain (name a	and #): Inte	rpreting Function			
func	tions using	different	F-IF-7 E			
repr	esentations					
			21 st Centu	rv Ther	nes	
Global Awareness Financial, Economic, Business, and Entrepreneurial Literacy Civic Literacy Health Literacy					Health Literacy	
			21 st Cent	ury Ski	lls	
	Creativity Innovat Media Lit	y and tion teracy	Critical Thinking and Probler Solving ICT Literacy	n	Communication and Collaboration Life and	Information Literacy Career Skills