



# PreCalculus UNIT PLANNER



<b>Unit title</b>	<b>DOE Unit 4 – Trigonometric Identities</b>	<b>Unit duration</b>	<b>4 – 5 Weeks</b>
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### Essential Questions (OR GUIDING QUESTIONS?)

- How can I add trigonometric functions?
- How can I subtract trigonometric functions?
- How can I prove the addition formula for trigonometric functions?
- How can I prove the subtraction formula for trigonometric functions?
- What is an identity?
- How can I simplify expressions using trigonometric identities?

### Assessments

Common Formative Assessment –  
 TOTD – Using reciprocal/quotient/Pythagorean Identities  
 Quiz – Using Sum/Difference/Double Identities  
 Quiz – Solving Trig Equations

Common Summative Assessment –  
 Unit Assessment

### Content Standards

**MGSE9-12.F.TF.9** Prove addition, subtraction, double, and half-angle formulas for sine, cosine, and tangent and use them to solve problems.

### Learning Activities and Experiences

Topic	Resource	Content Covered	Standards Addressed
Simplifying Identities	Discovering the Pythagorean Theorems Learning Task	<ul style="list-style-type: none"> <li>• Understand the meaning of an identity</li> <li>• Prove the Pythagorean identity is true for all real numbers</li> </ul>	MGSE9-12.F.TF.9
	Sum and Difference Identities Learning Task	<ul style="list-style-type: none"> <li>• Finding sine and cosine for angles that are not multiples of <math>\frac{\pi}{6}</math> and <math>\frac{\pi}{4}</math>.</li> </ul>	MGSE9-12.F.TF.9

		<ul style="list-style-type: none"> <li>Simplifying expression to find other identities.</li> </ul>	
	Tangent Sum and Difference Identities Learning Task	<ul style="list-style-type: none"> <li>Developing a proof for the Tangent addition and subtraction identities.</li> </ul>	MGSE9-12.F.TF.9
	Double Angle Identities for Sine, Cosine, and Tangent	<ul style="list-style-type: none"> <li>Using the Addition Identities to Derive the Double Angle Identities</li> </ul>	MGSE9-12.F.TF.9
	The Cosine Double-Angle: A Man with Many Identities	<ul style="list-style-type: none"> <li>Exploring the different forms of and uses for the double angle identity for cosine.</li> </ul>	MGSE9-12.F.TF.9
<b>Additional Resources:</b> <ul style="list-style-type: none"> <li>8-3 Trigonometric Identities - Pearson enVision</li> </ul>			
Solving Equations	Solving Trigonometric Equations	<ul style="list-style-type: none"> <li>Students solve equations over the interval <math>[0, 2\pi)</math> using inverse operations, taking the square root, and factoring.</li> </ul>	MGSE9-12.F.TF.9
	<b>Additional Resources:</b> <ul style="list-style-type: none"> <li>8-1 Solving Trigonometric Equations using Inverses – Pearson enVision</li> </ul>		

### Personalized Learning and Differentiation

Teachers differentiate by providing examples (work samples or task-specific clarifications of assessment criteria); structuring support (advance organizers, flexible grouping, peer relationships); establishing flexible deadlines, and adjusting the pace.

- SWD/504- Accommodations provided
- ELL- Five Principle ELL Curriculum Framework and Vocabulary Supports
- Intervention Support- Re-teaching Activities in Small Groups with Progress Monitoring
- Extensions- Enrichment Tasks and Projects

### Resources

DOE Framework Tasks  
Savvas Textbook Resources