



Trigonometry Learning Targets

1. Students understand the notion of angle and how to measure it, in both degrees and radians. They can convert between degrees and radians.
2. Students know the definition of sine and cosine as y - and x - coordinates of points on the unit circle and are familiar with the graphs of the sine and cosine functions.
3. Students know the identity $\cos^2(x) + \sin^2(x) = 1$, can prove that this identity is equivalent to the Pythagorean theorem, and can use it to prove other trigonometric identities.
4. Students graph functions of the form $f(t) = A \sin(Bt + C)$ or $f(t) = A \cos(Bt + C)$ and interpret A , B , and C in terms of amplitude, frequency, period, and phase shift.
5. Students know the definitions of the tangent and cotangent functions and can graph them.
6. Students know the definitions of the secant and cosecant functions and can graph them.
7. Students know that the tangent of the angle that a line makes with the x - axis is equal to the slope of the line.
8. Students know the definitions of the inverse trigonometric functions and can graph the functions.
9. Students compute, by hand, the values of the trigonometric functions and the inverse trigonometric functions at various standard points.
10. Students demonstrate an understanding of the addition formulas for sines and cosines and their proofs and can use those formulas to prove and/ or simplify other trigonometric identities.
11. Students demonstrate an understanding of half-angle and double-angle formulas for sines and cosines and can use those formulas to prove and/ or simplify other trigonometric identities.
12. Students use trigonometry to determine unknown sides or angles in right triangles.
13. Students know the law of sines and the law of cosines and apply those laws to solve problems.
14. Students determine the area of a triangle, given one angle and the two adjacent sides.
15. Students are familiar with polar coordinates. In particular, they can determine polar coordinates of a point given in rectangular coordinates and vice versa.
16. Students represent equations given in rectangular coordinates in terms of polar coordinates.
17. Students are familiar with complex numbers. They can represent a complex number in polar form and know how to multiply complex numbers in their polar form.
18. Students know De Moivre's theorem and can give n th roots of a complex number given in polar form.
19. Students are adept at using trigonometry in a variety of applications and word problems.