

## Trigonometry

1. Consider the triangle with sides 8, 16, and 17 units long. Is it a right triangle? [Solution](#)
2. Find the exact value of the distance between the points  $A(3, -6)$  and  $B(-3, 1)$ . [Solution](#)
3. Two sides of a right triangle are 9 and 40 units long. Find the exact value of the third side. [Solution](#)
4. Find the exact value of the height of the regular triangle with sides 14 units long. [Solution](#)
5. The base of a straight pyramid is a square with sides 14 units long. All other edges are 20 units long. Find the exact value of the height of the pyramid. [Solution](#)
6. The hypotenuse of a right triangle is 34cm long. The difference between the other two sides is 14cm. [Solution](#)
7. The shortest side of a right triangle is 24 miles long. The difference between the other two sides is 4 miles. Find the missing sides. [Solution](#)
8. Find the perimeter and area of the parallelogram determined by the points  $A(-2, -3)$ ,  $B(21, -3)$ ,  $C(5, 9)$ , and  $D(-18, 9)$ . [Solution](#)
9. Solve the given equations.
  - a)  $\sin \alpha + 1 = 2 \cos^2 \alpha$  [Solution](#)

[Proving the Sum Formulas Using Vectors](#)

[Deriving All Other Compound Angle Formulas](#)

[Sum-Product Identities](#)

10. Suppose that  $C$  is the center of a circle with radius 9in and a point  $P$  is at a distance of 14in from  $C$ . Find exact value of sine of the angle that is formed by two tangent lines drawn to the circle.

[Solution](#)