Basic Trigonometry: Soh-Cah-Toa

Soh-Cah-Toa

Soh-Cah-Toa is a helpful acronym to remember sin, cos, and tan for trigonometry. Below shows how helpful the acronym can be.

“Θ” Means Angle
“O” Means Opposite with respect to Θ
“A” Means Adjacent with respect to Θ
“H” Mean Hypotenuse with respect to Θ

Sin θ = O/H
Cos θ = A/H
Tan θ = O/A
Csc θ = 1/sin θ = H/O
Sec θ = 1/cos θ = H/A
Cot θ = 1/tan θ = A/O

<table>
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<th>Degree/Radians</th>
<th>0</th>
<th>2π</th>
<th>30</th>
<th>π/6</th>
<th>45</th>
<th>π/4</th>
<th>60</th>
<th>π/3</th>
<th>90</th>
<th>π/2</th>
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<tbody>
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<td>1/2</td>
<td>√2/2</td>
<td>√3/2</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Cos θ</td>
<td>1</td>
<td>√3/2</td>
<td>√2/2</td>
<td>1/2</td>
<td>0</td>
<td></td>
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<td></td>
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<tr>
<td>Tan θ</td>
<td>0</td>
<td>1/√3</td>
<td>1</td>
<td>√3</td>
<td>∞ or UND</td>
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<tr>
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Example

A spy plane is detected by a ground satellite, and the plane is 550 miles away with an angle of 60 degrees. How high is the plane from the ground?

Step 1

Draw a picture

Step 2

Soh-Cah-Toa?

Sin θ = O/H

Step 3

Plug and Solve

Sin (60) = y/550
√3/2 = y/550
(550) √3/2 = y
275 √3 = y