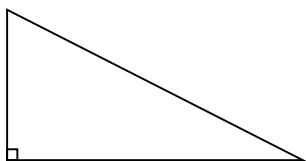


Unit 6: Standard Position Trigonometry

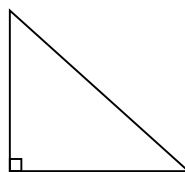
6.3 Special Triangles, Exact Values, & Quadrantal Angles

Special Triangles:

$30^\circ - 60^\circ - 90^\circ$



$45^\circ - 45^\circ - 90^\circ$



These triangles allow us to produce exact values for all the trig ratios (without use of a calculator) involving 30° , 45° & 60° :

	30°	45°	60°
$\sin \theta = \text{—}$	$\sin 30^\circ =$	$\sin 45^\circ =$	$\sin 60^\circ =$
$\cos \theta = \text{—}$	$\cos 30^\circ =$	$\cos 45^\circ =$	$\cos 60^\circ =$
$\tan \theta = \text{—}$	$\tan 30^\circ =$	$\tan 45^\circ =$	$\tan 60^\circ =$

Can also be used to produce exact values for all the trig ratios (without use of a calculator) for standard position angles whose reference angles are 30° , 45° or 60° :

ex. Find the exact value of:

$$\sin 150^\circ$$

$$\cos 150^\circ$$

$$\sin 225^\circ$$

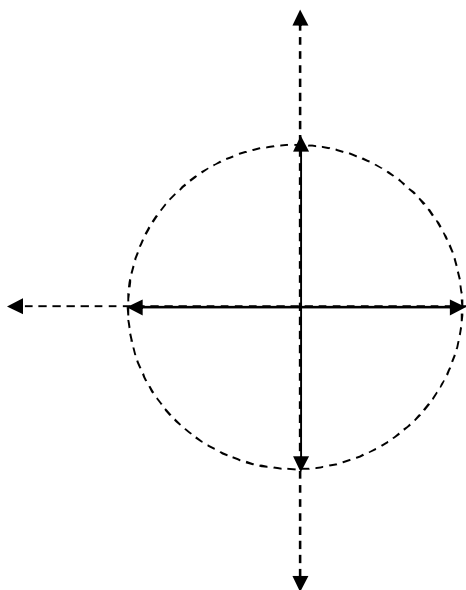
$$\tan 225^\circ$$

ex. A tree casts a shadow 8 m long when the angle of elevation of the sun is 60° . Calculate the exact height of the tree.

Quadrantal Angles:

Angles in standard position with terminal arm on the x or y axis.

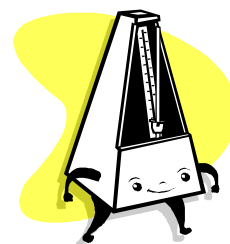
We can also determine exact trigonometric ratio values for quadrantal angles by using a unit circle (terminal arm length constant $r = 1$).



	$\sin \theta = \text{---}$	$\cos \theta = \text{---}$	$\tan \theta = \text{---}$
0°	$\sin 0^\circ =$	$\cos 0^\circ =$	$\tan 0^\circ =$
90°	$\sin 90^\circ =$	$\cos 90^\circ =$	$\tan 90^\circ =$
180°	$\sin 180^\circ =$	$\cos 180^\circ =$	$\tan 180^\circ =$
270°	$\sin 270^\circ =$	$\cos 270^\circ =$	$\tan 270^\circ =$

Note: $\infty = \text{undefined}$

ex. Allie is learning to play the piano. Her teacher uses a metronome to help her keep time. The pendulum arm of the metronome is 10 cm long. For one particular tempo, the setting results in the arm moving back and forth from a start position of 30° to 150° . What horizontal distance does the tip of the arm move in one beat? Give an exact value.



Practice: pg. 83/ # 8, 11, 13

pg. 96/ # 2, 9, 10, 18, 19, 20



This document was created with the Win2PDF "print to PDF" printer available at
<http://www.win2pdf.com>

This version of Win2PDF 10 is for evaluation and non-commercial use only.

This page will not be added after purchasing Win2PDF.

<http://www.win2pdf.com/purchase/>