

The Heart and Soul Trigonometry Lesson with a Unit Circle (Day 7, 8 and 9 and 10)

Lesson 150 | Trigonometry | Unit circle and exact values • Right and special right triangles

<https://www.youtube.com/watch?v=MlgEcGJ0NFI>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Find exact $\sin(3210^\circ)$ and $\cos(3210^\circ)$ using the unit circle. Give the coterminal angle in $[0^\circ, 360^\circ)$.

02

A right triangle has legs 165 and 220. Find its hypotenuse and the altitude to the hypotenuse.

03

Find exact $\sin(2790^\circ)$ and $\cos(2790^\circ)$ using the unit circle. Give the coterminal angle in $[0^\circ, 360^\circ)$.

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04

A 30° - 60° - 90° triangle has shorter leg 65. Find the longer leg and hypotenuse.

05

Find exact $\sin(1260^\circ)$ and $\cos(1260^\circ)$ using the unit circle. Give the coterminal angle in $[0^\circ, 360^\circ)$.

06

A right triangle has legs 132 and 176. Find its hypotenuse and the altitude to the hypotenuse.

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01

Find exact $\sin(3210^\circ)$ and $\cos(3210^\circ)$ using the unit circle. Give the coterminal angle in $[0^\circ, 360^\circ)$.

Coterminal angle 330° . Coordinates $(\cos \theta, \sin \theta) = (\sqrt{3}/2, -1/2)$; the first is cosine and the second is sine.

02

A right triangle has legs 165 and 220. Find its hypotenuse and the altitude to the hypotenuse.

Pythagorean theorem gives hypotenuse 275. Equate areas: $(1/2)(165)(220) = (1/2)(275)h$, so $h=132$.

03

Find exact $\sin(2790^\circ)$ and $\cos(2790^\circ)$ using the unit circle. Give the coterminal angle in $[0^\circ, 360^\circ)$.

Coterminal angle 270° . Coordinates $(\cos \theta, \sin \theta) = (0, -1)$; the first is cosine and the second is sine.

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04

A 30° - 60° - 90° triangle has shorter leg 65. Find the longer leg and hypotenuse.

The side ratio is $1:\sqrt{3}:2$. Longer leg $65\sqrt{3}$; hypotenuse 130.

05

Find exact $\sin(1260^\circ)$ and $\cos(1260^\circ)$ using the unit circle. Give the coterminal angle in $[0^\circ, 360^\circ)$.

Coterminal angle 180° . Coordinates $(\cos \theta, \sin \theta) = (-1, 0)$; the first is cosine and the second is sine.

06

A right triangle has legs 132 and 176. Find its hypotenuse and the altitude to the hypotenuse.

Pythagorean theorem gives hypotenuse 220. Equate areas: $(1/2)(132)(176) = (1/2)(220)h$, so $h = 528/5$.