

The Secret of Finding Angles with Inverse Trigonometric Ratios

Lesson 151 | Trigonometry | Inverse trigonometric functions

<https://www.youtube.com/watch?v=H0iZeoZek88>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Let $\theta = \arctan(8/10)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

02

Let $\theta = \arctan(13/8)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

03

Let $\theta = \arctan(11/12)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

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04

Let $\theta = \arctan(12/7)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

05

Let $\theta = \arctan(6/2)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

06

Let $\theta = \arctan(6/8)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

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01

Let $\theta = \arctan(8/10)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

The ratio is positive, so $0 < \theta < \pi/2$. Use opposite 8, adjacent 10, hypotenuse $\sqrt{164}$. $\sin \theta = 4 \cdot \sqrt{41}/41$; $\cos \theta = 5 \cdot \sqrt{41}/41$.

02

Let $\theta = \arctan(13/8)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

The ratio is positive, so $0 < \theta < \pi/2$. Use opposite 13, adjacent 8, hypotenuse $\sqrt{233}$. $\sin \theta = 13 \cdot \sqrt{233}/233$; $\cos \theta = 8 \cdot \sqrt{233}/233$.

03

Let $\theta = \arctan(11/12)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

The ratio is positive, so $0 < \theta < \pi/2$. Use opposite 11, adjacent 12, hypotenuse $\sqrt{265}$. $\sin \theta = 11 \cdot \sqrt{265}/265$; $\cos \theta = 12 \cdot \sqrt{265}/265$.

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04

Let $\theta = \arctan(12/7)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

The ratio is positive, so $0 < \theta < \pi/2$. Use opposite 12, adjacent 7, hypotenuse $\sqrt{193}$. $\sin \theta = 12 \cdot \sqrt{(193)/193}$; $\cos \theta = 7 \cdot \sqrt{(193)/193}$.

05

Let $\theta = \arctan(6/2)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

The ratio is positive, so $0 < \theta < \pi/2$. Use opposite 6, adjacent 2, hypotenuse $\sqrt{40}$. $\sin \theta = 3 \cdot \sqrt{(10)/10}$; $\cos \theta = \sqrt{(10)/10}$.

06

Let $\theta = \arctan(6/8)$ using the principal value. Find exact $\sin \theta$ and $\cos \theta$, and state its quadrant.

The ratio is positive, so $0 < \theta < \pi/2$. Use opposite 6, adjacent 8, hypotenuse $\sqrt{100}$. $\sin \theta = 3/5$; $\cos \theta = 4/5$.