

Watch. Practice. Understand. | Lesson 151

The Secret of Finding Angles with Inverse Trigonometric Ratios

Watch the matching video: <https://www.youtube.com/watch?v=H0iZeoZek88>

Practice focus: Inverse trigonometric functions

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Evaluate $\arcsin(1/2)$, $\arccos(-1/2)$, and $\arctan(-1)$. Use principal values.

02 Evaluate $\arcsin(\sin(5\pi/6))$.

03 Evaluate $\cos(\arctan(3/4))$.

04 Solve $\sin x = 1/2$ on $0 \leq x < 2\pi$.

Worked answers | Lesson 151

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01 Evaluate $\arcsin(1/2)$, $\arccos(-1/2)$, and $\arctan(-1)$. Use principal values.
 $\pi/6$, $2\pi/3$, and $-\pi/4$ respectively, using the principal-value ranges.

02 Evaluate $\arcsin(\sin(5\pi/6))$.
 $\arcsin$ outputs values in $[-\pi/2, \pi/2]$. Since $\sin(5\pi/6) = 1/2$, the result is $\pi/6$.

03 Evaluate $\cos(\arctan(3/4))$.
Take a right triangle with opposite 3, adjacent 4, hypotenuse 5. Cosine is $4/5$.

04 Solve $\sin x = 1/2$ on $0 \leq x < 2\pi$.
Unit-circle solutions in quadrants I and II: $x = \pi/6, 5\pi/6$. Inverse sine alone gives only the first.