

Precalculus - Inverse Trigonometric Functions and Equations - Test

Common Core F-TF.B.6, F-TF.B.7 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 20-point test covers inverse trig values, compositions, solving trigonometric equations and a ramp model (F-TF.B.6, F-TF.B.7). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Inverse Trigonometric Functions and Equations
- Standards: F-TF.B.6, F-TF.B.7
- Time: 45 minutes
- Total: 20 points

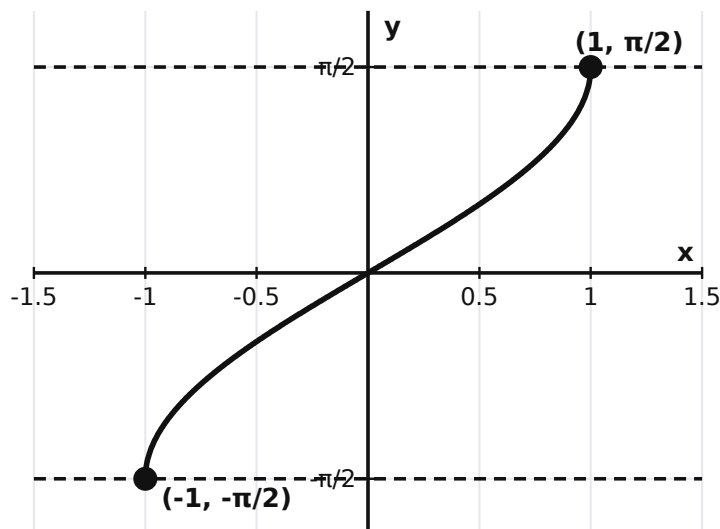
Question 1 - Exact inverse values [2 pts]

Evaluate $\arcsin\left(-\frac{1}{2}\right)$ and $\arccos 0$.

Question 2 - More inverse values [2 pts]

Evaluate $\arctan(-1)$ and $\arcsin\frac{\sqrt{3}}{2}$.

Question 3 - Compositions [2 pts]



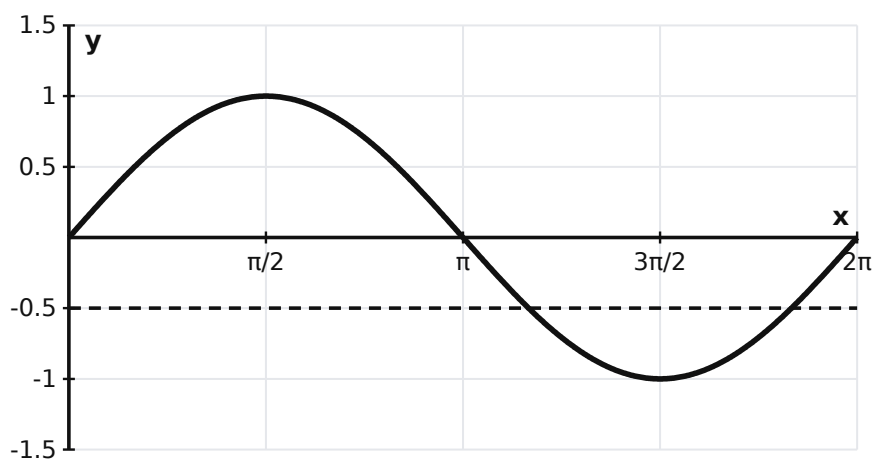
Graph of $y = \arcsin x$.

Evaluate $\arcsin\left(\sin\frac{5\pi}{6}\right)$ and $\cos(\arccos 0.25)$.

Question 4 - Triangle method [2 pts]

Find $\cos\left(\arcsin\frac{5}{13}\right)$ and $\sin\left(\arccos\frac{4}{5}\right)$.

Question 5 - Solve from a graph [3 pts]



The curve $y = \sin x$ and the line $y = -1/2$.

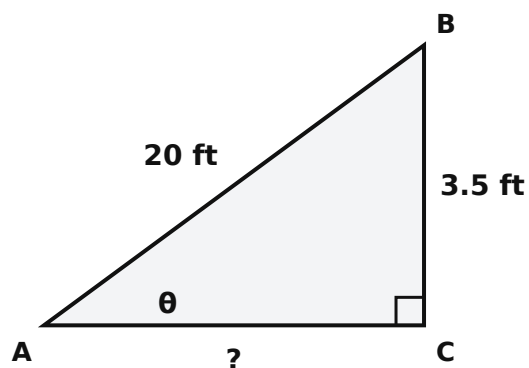
Solve $\sin x = -\frac{1}{2}$ for $0 \leq x < 2\pi$. (a) Estimate the solutions from the graph. (b) State the reference angle. (c) Give the exact solutions.

Question 6 - Solve a cosine equation [2 pts]

Solve $2\cos x - \sqrt{3} = 0$ for $0 \leq x < 2\pi$.

Question 7 - General solution [2 pts]

Write all solutions of $\tan x = \sqrt{3}$.

Question 8 - Ramp angle [3 pts]

A ramp 20 feet long rising 3.5 feet.

Sofia's ramp is 20 ft long and rises 3.5 ft. (a) Find its angle with the ground to the nearest hundredth of a degree. (b) A rule allows a slope of at most 1 foot of rise per 12 feet of run. Find that maximum angle. (c) Is Sofia's ramp steeper than allowed?

Question 9 - Quadratic in sine [2 pts]

Solve $2\sin^2 x - 3\sin x + 1 = 0$ for $0 \leq x < 2\pi$.