

Algebra 2 - Graphs of Trigonometric Functions and Identities - Test

Common Core F-TF.B.5, F-TF.C.8, F-IF.C.7e · maths-pdf.fr/en/

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

This 45-minute test on graphs of trigonometric functions and the Pythagorean identity has 9 questions worth 20 points in total. The questions move from direct skills to multi-step problems. Show your work, because partial credit is given for a correct setup and sound reasoning.

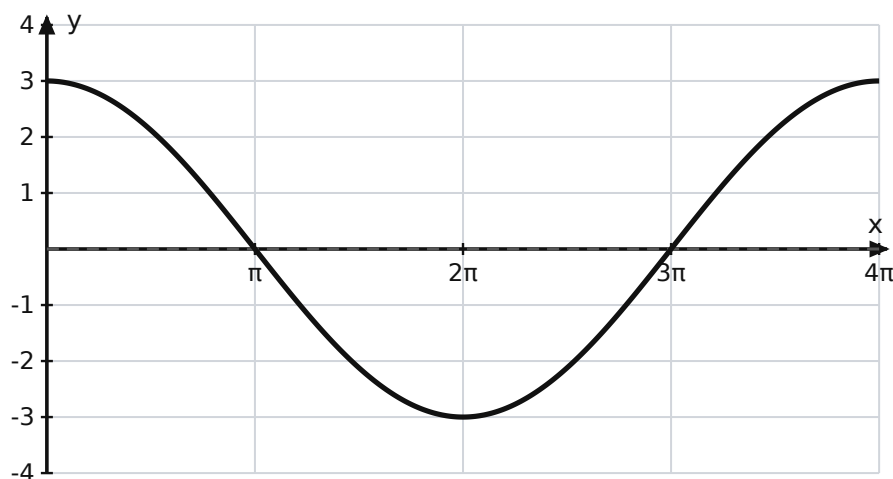
About this test

- Grade: Algebra 2
- Chapter: Graphs of Trigonometric Functions and Identities
- Standards: F-TF.B.5, F-TF.C.8, F-IF.C.7e
- Time: 45 minutes
- Total: 20 points

Question 1 - Read the parameters [2 pts]

State the amplitude, period, and midline of $y = 4\cos(3x) - 2$.

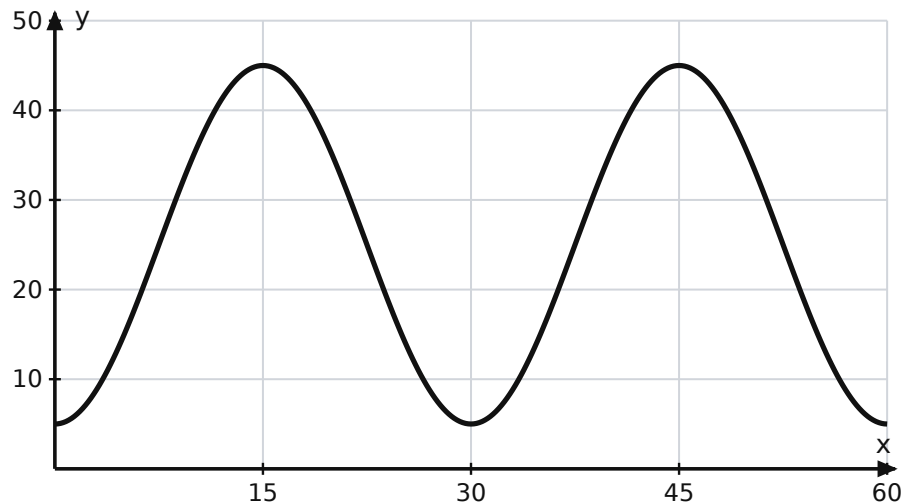
Question 2 - Equation from a graph [3 pts]



A cosine graph.

The graph shows a cosine-type wave with amplitude 3, midline $y=0$, and period 4π , starting at its maximum. Write the equation.

Question 3 - Ferris wheel [2 pts]



Rider's height in feet over 60 seconds.

A rider's height is $h(t) = 25 - 20\cos\left(\frac{\pi}{15}t\right)$ feet. Find the height at $t = 5$ seconds and the maximum height.

Question 4 - Cosine from sine [2 pts]

If $\sin\theta = \frac{5}{13}$ and θ is in quadrant II, find $\cos\theta$.

Question 5 - Simplify [2 pts]

Simplify $\cos^2 x (1 + \tan^2 x)$. Use $\tan x = \frac{\sin x}{\cos x}$.

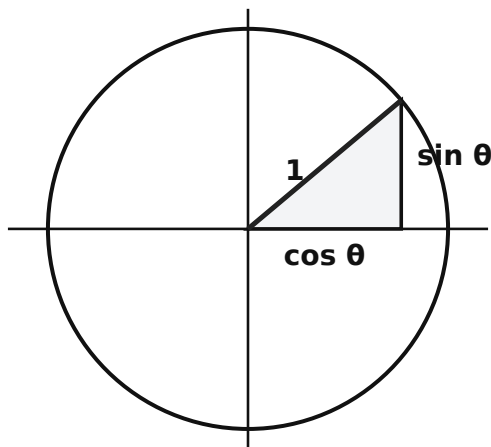
Question 6 - Write an equation [3 pts]

Write a cosine function for a quantity with maximum 10, minimum 2, and period 8, starting at the maximum.

Question 7 - Tides [2 pts]

A tide model is $y = 3\sin\left(\frac{\pi}{6}t\right) + 5$ feet. Find the period and the high-tide height.

Question 8 - Quadrant IV [2 pts]



The right triangle in the unit circle: $\cos^2 \theta + \sin^2 \theta = 1$.

If $\cos \theta = \frac{3}{5}$ and θ is in quadrant IV, find $\sin \theta$ and $\tan \theta$.

Question 9 - Find the error [2 pts]

Mei says $y = 2\sin x + 3$ has a minimum of 1 and a maximum of 5. Is she correct? Explain.