

Precalculus - Trigonometric Identities - Test

Common Core F-TF.C.8, F-TF.C.9 · maths-pdf.fr/en/

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

This 20-point test covers the Pythagorean identity, sum and double-angle formulas, verifying identities, solving equations and a projectile model (F-TF.C.8, F-TF.C.9). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Trigonometric Identities
- Standards: F-TF.C.8, F-TF.C.9
- Time: 45 minutes
- Total: 20 points

Question 1 - Simplify [2 pts]

Simplify $\frac{\sin^2 x}{1 - \cos x}$ to a form with no fraction.

Question 2 - Exact value [2 pts]

Find the exact value of $\cos 75^\circ$.

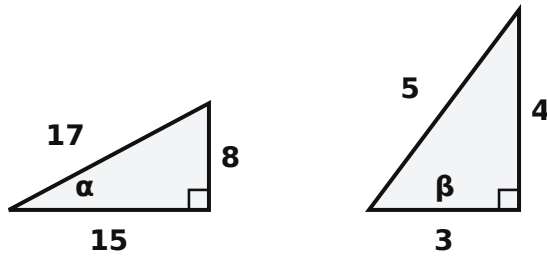
Question 3 - Double angle [2 pts]

If $\cos \theta = \frac{5}{13}$ and θ is in quadrant IV, find $\sin 2\theta$ and $\cos 2\theta$.

Question 4 - Verify [2 pts]

Verify $\frac{1 - \cos 2x}{2 \sin x} = \sin x$.

Question 5 - Angle addition [3 pts]



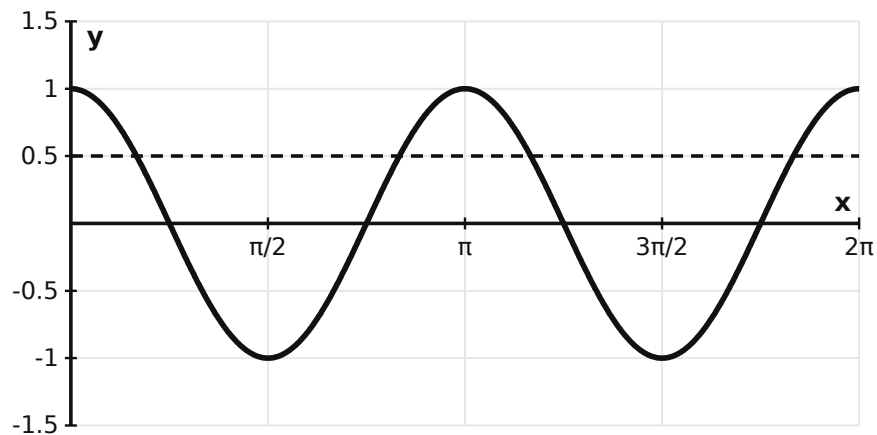
Two acute angles.

Acute angles α and β have $\sin \alpha = \frac{8}{17}$ and $\cos \beta = \frac{3}{5}$. Find (a) $\sin(\alpha + \beta)$; (b) $\cos(\alpha + \beta)$; (c) $\tan(\alpha + \beta)$.

Question 6 - Solve [2 pts]

Solve $\sin 2x = \cos x$ for $0 \leq x < 2\pi$.

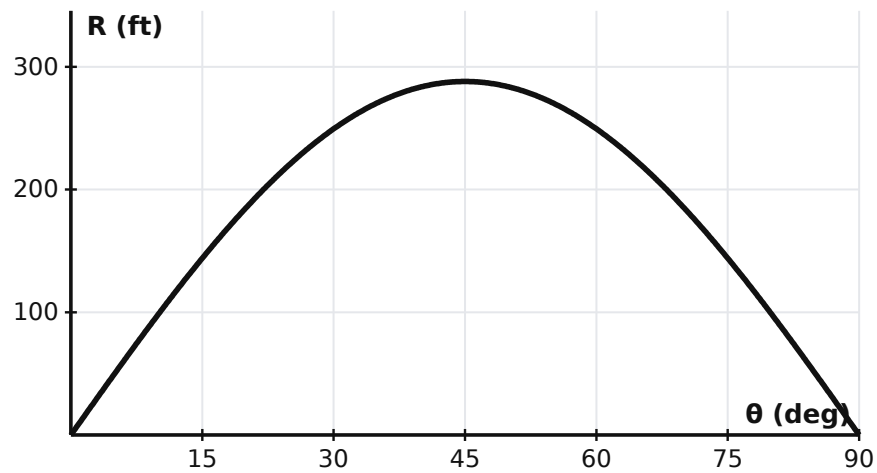
Question 7 - Solve with $\cos 2x$ [2 pts]



Graph of $y = \cos 2x$ and $y = 1/2$.

Solve $\cos 2x = \frac{1}{2}$ for $0 \leq x < 2\pi$.

Question 8 - Projectile range [3 pts]



Range against launch angle.

A ball launched at 96 ft/s with angle θ has range $R = \frac{96^2 \sin 2\theta}{32}$ feet. (a) Find R at 15° . (b) Find R at 45° . (c) Find another angle with the same range as 15° .

Question 9 - Verify a Pythagorean form [2 pts]

Verify $(1 + \tan^2 x) \cos^2 x = 1$.