

Precalculus · Trigonometric Identities · Test

Common Core F-TF.C.8, F-TF.C.9 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This precalculus trig identities test checks trigonometric identities in 45 minutes, with 8 questions for a total of 20 points.

This test has 8 questions worth 20 points in total. Give exact values unless a question asks for decimals, and show every step of each proof. A calculator is allowed for checking, and the test takes about 45 minutes.

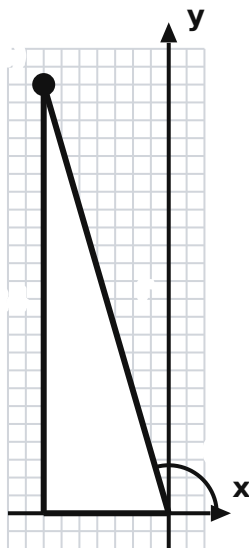
Test information

- **Grade:** Precalculus
- **Chapter:** Trigonometric Identities
- **Common Core:** F-TF.C.8, F-TF.C.9
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 3 pts; Question 2: 2 pts; Question 3: 2 pts; Question 4: 3 pts; Question 5: 2 pts; Question 6: 3 pts; Question 7: 3 pts; Question 8: 2 pts)

Precalculus Trig Identities Test: questions 1-5

Question 1: Six functions from a point (3 points)

The terminal side of angle θ passes through the point shown.



The point $P(-7, 24)$.

- Find $\sin\theta$ and $\cos\theta$. (1 point)
- Find $\tan\theta$ and $\sec\theta$. (1 point)
- Show that the values from part (a) satisfy $\sin^2\theta + \cos^2\theta = 1$. (1 point)

Question 2: Values from a Pythagorean identity (2 points)

Angle θ is in Quadrant IV and $\sin\theta = -\frac{9}{41}$.

- Find $\cos\theta$. (1 point)
- Find $\tan\theta$. (1 point)

Question 3: Simplify (2 points)

Simplify each expression to a single term.

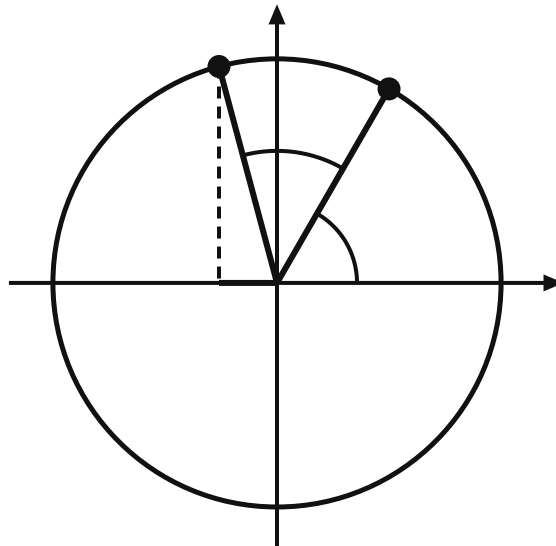
- $(\sec^2\theta - 1)\cos^2\theta$ (1 point)
- $\frac{\sin\theta}{1 - \cos^2\theta}$ (1 point)

Question 4: Verify an identity (3 points)

Verify the identity $\frac{1 + \sin\theta}{\cos\theta} = \frac{\cos\theta}{1 - \sin\theta}$.

Question 5: Exact value of $\sin 105^\circ$ (2 points)

Find the exact value of $\sin 105^\circ$ and explain which angles you used.

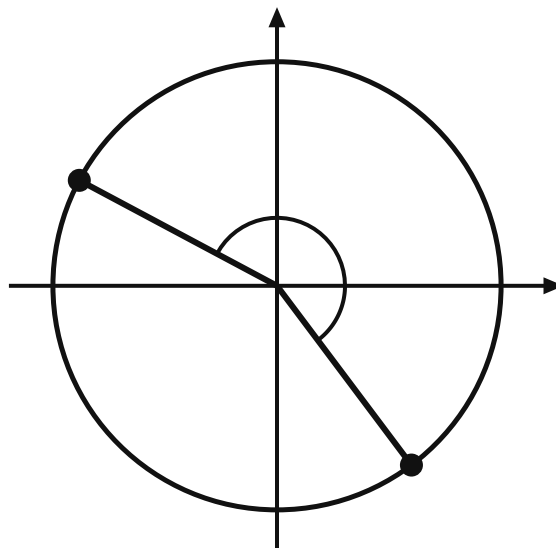


Rays at 60 and 105 degrees.

Precalculus Trig Identities Test: questions 6-8

Question 6: Difference formulas (3 points)

Angle A is in Quadrant II with $\sin A = \frac{8}{17}$. Angle B is in Quadrant IV with $\cos B = \frac{3}{5}$.



Angles A and B.

- Find $\cos A$ and $\sin B$. (1 point)
- Find $\cos(A - B)$. (1 point)
- Find $\sin(A - B)$. (1 point)

Question 7: Double angle from a tangent (3 points)

Angle θ is in Quadrant III and $\tan \theta = \frac{4}{3}$.

- a. Find $\sin\theta$ and $\cos\theta$. (1 point)
- b. Find $\sin 2\theta$ and $\cos 2\theta$. (1 point)
- c. Find $\tan 2\theta$ two different ways. (1 point)

Question 8: Prove a double-angle identity (2 points)

Prove that $\cos 2\theta = \frac{1 - \tan^2\theta}{1 + \tan^2\theta}$.

How to use this precalculus trig identities test

Take this precalculus trig identities test without notes, then grade it with the test answer key out of 20 points.

