Trigonometric Identities Quiz PDF

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Which of the following is a double angle identity for cosine?

- ◯ $\cos(2\theta) = 2\cos^2\theta - 1$
- ◯ $\cos(2\theta) = \sin^2\theta - \cos^2\theta$
- ◯ $\cos(2\theta) = 1 - \sin^2\theta$
- ◯ $\cos(2\theta) = 2\sin\theta\cos\theta$

Which identity is used to express tan(2θ)?

- ◯ $2\tan\theta / (1 - \tan^2\theta)$
- ◯ $\tan^2\theta + 1$
- ◯ $\sin(2\theta) \cdot \cos(2\theta)$
- ◯ $\tan\theta / (1 + \tan^2\theta)$

What is the value of sin(90° - θ)?

- ◯ $\sin\theta$
- ◯ $\cos\theta$
- ◯ $\tan\theta$
- ◯ $\csc\theta$

Which of the following is the Pythagorean identity?

- ◯ $\sin^2\theta + \cos^2\theta = 1$
- ◯ $\tan^2\theta + \sec^2\theta = 1$
- ◯ $\sin\theta \cdot \cos\theta = 1$
- ◯ $\tan\theta \cdot \cot\theta = 1$

Which of the following are valid angle sum identities?

- ☐ $\sin(\alpha + \beta) = \sin\alpha\cos\beta + \cos\alpha\sin\beta$
- ☐ $\cos(\alpha + \beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$

- [ ] $\tan(\alpha + \beta) = (\tan \alpha + \tan \beta) / (1 - \tan \alpha \tan \beta$
- [ ] $\sin(\alpha + \beta) = \sin \alpha \sin \beta + \cos \alpha \cos \beta$

Identify the half-angle identities for sine and cosine.

- [ ] $\sin^2(\theta/2) = (1 - \cos \theta)/2$
- [ ] $\cos^2(\theta/2) = (1 + \cos \theta)/2$
- [ ] $\sin^2(\theta/2) = (1 + \cos \theta)/2$
- [ ] $\cos^2(\theta/2) = (1 - \cos \theta)/2$

Select the correct double angle identities for sine and cosine.

- [ ] $\sin(2\theta) = 2\sin \theta \cos \theta$
- [ ] $\cos(2\theta) = \cos^2\theta - \sin^2\theta$
- [ ] $\sin(2\theta) = \sin^2\theta + \cos^2\theta$
- [ ] $\cos(2\theta) = 1 - 2\sin^2\theta$

Provide a real-world application of trigonometric identities and explain how they are used in that context.

Explain how the Pythagorean identity $\sin^2\theta + \cos^2\theta = 1$ can be used to derive other trigonometric identities.

Explain the relationship between product-to-sum identities and sum-to-product identities, and how they can be used to simplify trigonometric expressions.

Describe the process of using angle sum identities to simplify trigonometric expressions. Provide an example.

Which identity represents the cosine of a sum of two angles?

- ◯ $\cos(\alpha + \beta) = \cos\alpha \cos\beta - \sin\alpha \sin\beta$
- ◯ $\cos(\alpha + \beta) = \sin\alpha \cos\beta + \cos\alpha \sin\beta$
- ◯ $\cos(\alpha + \beta) = \tan\alpha + \tan\beta$
- ◯ $\cos(\alpha + \beta) = \sec\alpha \sec\beta$

Which of the following are Pythagorean identities?

- ☐ $\sin^2\theta + \cos^2\theta = 1$
- ☐ $1 + \tan^2\theta = \sec^2\theta$
- ☐ $\sin\theta + \cos\theta = 1$
- ☐ $1 + \cot^2\theta = \csc^2\theta$

What is the co-function identity for $\tan(\pi/2 - \theta)$?

- ◯ $\sin\theta$
- ◯ $\cos\theta$
- ◯ $\cot\theta$
- ◯ $\sec\theta$

What is the reciprocal of the sine function?

- ◯ Secant
- ◯ Cosecant
- ◯ tangent
- ◯ Cotangent

Which of the following are co-function identities?

- ☐ $\sin(\pi/2 - \theta) = \cos \theta$
- ☐ $\cos(\pi/2 - \theta) = \sin \theta$
- ☐ $\tan(\pi/2 - \theta) = \sec \theta$
- ☐ $\csc(\pi/2 - \theta) = \sec \theta$

Select the identities that can be derived from the Pythagorean identity $\sin^2\theta + \cos^2\theta = 1$.

- ☐ $\sin^2\theta = 1 - \cos^2\theta$
- ☐ $\cos^2\theta = 1 - \sin^2\theta$
- ☐ $\tan^2\theta = \sec^2\theta - 1$
- ☐ $\cot^2\theta = \csc^2\theta - 1$

How can double angle identities be applied in solving trigonometric equations? Illustrate with an example.

Discuss the significance of co-function identities in trigonometry and provide an example of their application.

What is the identity for sin(α - β)?

- ◯ sin α cos β - cos α sin β
- ◯ cos α cos β + sin α sin β
- ◯ sin α sin β - cos α cos β
- ◯ tan α - tan β