

Basic Trigonometric Identities

Simplify or verify each identity. State the restrictions from the original expression and show the named identity used at each step.

1. Verify $\sin(2x)/\cos(2x) = \tan(2x)$. State the original-domain restrictions.

Original-domain restrictions: _____

2. Simplify $1/\cos(2x)$. State the original-domain restrictions.

Original-domain restrictions: _____

Basic Trigonometric Identities

Simplify or verify each identity. State the restrictions from the original expression and show the named identity used at each step.

3. Verify $1 + \tan^2(2x) = \sec^2(2x)$. State the original-domain restrictions.

Original-domain restrictions: _____

4. Simplify $(1 - \cos^2(2x))/\sin(2x)$. State the original-domain restrictions.

Original-domain restrictions: _____

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Basic Trigonometric Identities

Simplify or verify each identity. State the restrictions from the original expression and show the named identity used at each step.

5. Verify $1 - \sin^2(2x) = \cos^2(2x)$. State the original-domain restrictions.

Original-domain restrictions: _____

6. Simplify $\cos(2x)/\sin(2x)$. State the original-domain restrictions.

Original-domain restrictions: _____

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Basic Trigonometric Identities

Simplify or verify each identity. State the restrictions from the original expression and show the named identity used at each step.

7. Verify $(\sec^2(2x) - 1)/\tan(2x) = \tan(2x)$. State the original-domain restrictions.

Original-domain restrictions: _____

8. Simplify $1/\sin(2x)$. State the original-domain restrictions.

Original-domain restrictions: _____

Basic Trigonometric Identities

Worked Answer Key

Simplify or verify each identity. State the restrictions from the original expression and show the named identity used at each step.

1. Verify $\sin(2x)/\cos(2x) = \tan(2x)$. State the original-domain restrictions.

Answer: Verified: $\sin(2x)/\cos(2x) = \tan(2x)$

Original domain: $\cos(2x) \neq 0$.

1. Apply the quotient identity $\tan(2x) = \sin(2x)/\cos(2x)$.
2. Keep the original restriction $\cos(2x) \neq 0$.

2. Simplify $1/\cos(2x)$. State the original-domain restrictions.

Answer: $\sec(2x)$

Original domain: $\cos(2x) \neq 0$.

1. Apply the reciprocal identity $\sec(2x) = 1/\cos(2x)$.
2. The original denominator requires $\cos(2x) \neq 0$.

Basic Trigonometric Identities

Worked Answer Key

Simplify or verify each identity. State the restrictions from the original expression and show the named identity used at each step.

3. Verify $1 + \tan^2(2x) = \sec^2(2x)$. State the original-domain restrictions.

Answer: Verified: $1 + \tan^2(2x) = \sec^2(2x)$

Original domain: $\cos(2x) \neq 0$.

1. Apply the Pythagorean identity $1 + \tan^2(2x) = \sec^2(2x)$.
2. Both sides require $\cos(2x) \neq 0$.

4. Simplify $(1 - \cos^2(2x))/\sin(2x)$. State the original-domain restrictions.

Answer: $\sin(2x)$

Original domain: $\sin(2x) \neq 0$.

1. Replace $1 - \cos^2(2x)$ with $\sin^2(2x)$.
2. Cancel one $\sin(2x)$ only on the original domain $\sin(2x) \neq 0$.

Basic Trigonometric Identities

Worked Answer Key

Simplify or verify each identity. State the restrictions from the original expression and show the named identity used at each step.

5. Verify $1 - \sin^2(2x) = \cos^2(2x)$. State the original-domain restrictions.

Answer: Verified: $1 - \sin^2(2x) = \cos^2(2x)$

Original domain: all real x .

1. Start with $\sin^2(2x) + \cos^2(2x) = 1$.
2. Subtract $\sin^2(2x)$ from both sides.

6. Simplify $\cos(2x)/\sin(2x)$. State the original-domain restrictions.

Answer: $\cot(2x)$

Original domain: $\sin(2x) \neq 0$.

1. Apply the quotient identity $\cot(2x) = \cos(2x)/\sin(2x)$.
2. Keep the original restriction $\sin(2x) \neq 0$.

Basic Trigonometric Identities

Worked Answer Key

Simplify or verify each identity. State the restrictions from the original expression and show the named identity used at each step.

7. Verify $(\sec^2(2x) - 1)/\tan(2x) = \tan(2x)$. State the original-domain restrictions.

Answer: Verified: $(\sec^2(2x) - 1)/\tan(2x) = \tan(2x)$

Original domain: $\cos(2x) \neq 0$; $\sin(2x) \neq 0$.

1. Replace $\sec^2(2x) - 1$ with $\tan^2(2x)$.
2. Cancel one $\tan(2x)$; the original expression requires $\cos(2x) \neq 0$ and $\tan(2x) \neq 0$, equivalently $\sin(2x) \neq 0$.

8. Simplify $1/\sin(2x)$. State the original-domain restrictions.

Answer: $\csc(2x)$

Original domain: $\sin(2x) \neq 0$.

1. Apply the reciprocal identity $\csc(2x) = 1/\sin(2x)$.
2. The original denominator requires $\sin(2x) \neq 0$.