

WebAssign

MAT 10 HW 7.3 (Homework)

muhammad alkhatieb
 MAT 10 - Mulari, Spring 2014
 Instructor: Jeffrey Mulari

Current Score : - / 35

Due : Thursday, May 8 2014 11:59 PM PDT

1. -/2 points

SPreCalc6 7.3.073.

Prove the identity.

$$\cos^2 8x - \sin^2 8x = \cos 16x$$

Use a Double-Angle Formula and simplify.

$$\cos^2 8x - \sin^2 8x = \cos(2 \cdot \quad) \\ =$$

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2. -/3 points

SPreCalc6 7.3.075.

Prove the identity.

$$(\sin x + \cos x)^2 = 1 + \sin 2x$$

Expand the product, and use a Pythagorean Identity and a Double-Angle Formula to simplify.

$$(\sin x + \cos x)^2 = \sin^2 x + 2 \sin x \cos x + \\ = \\ 1 + 2 \sin x \\ =$$

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3. -/3 points

SPreCalc6 7.3.077.

Prove the identity.

$$\frac{2 \sin 4x}{\sin x} = 8 \cos x \cos 2x$$

Use the Double-Angle Formula for Sine as needed and then simplify.

$$\begin{aligned}\frac{2 \sin 4x}{\sin x} &= 4 \left(\frac{\quad}{\sin x} \right) \\ &= 4 \left(2 \left(\frac{\quad}{\sin x} \right) \right) (\cos 2x) \\ &= \end{aligned}$$

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4. -/6 points

SPreCalc6 7.3.079.

Prove the identity.

$$\frac{4(\tan x - \cot x)}{\tan^2 x - \cot^2 x} = 2 \sin 2x$$

Factor the denominator and then simplify.

$$\begin{aligned} \frac{4(\tan x - \cot x)}{\tan^2 x - \cot^2 x} &= \frac{4(\tan x - \cot x)}{(\tan x + \cot x)(\quad)} \\ &= \frac{\quad}{\tan x + \cot x} \end{aligned}$$

Use the Reciprocal Identities and simplify the compound fraction.

$$\begin{aligned} &= \frac{\quad}{\frac{\sin x}{\cos x} + \frac{\cos x}{\sin x}} \\ &= \frac{\quad}{\sin^2 x + \cos^2 x} \end{aligned}$$

Use a Pythagorean Identity and a Double-Angle Formula to simplify.

$$\begin{aligned} &= \frac{\quad}{1} \\ &= \end{aligned}$$

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5. -/6 points

SPreCalc6 7.3.081.

Prove the identity.

$$4 \tan 3x = \frac{12 \tan x - 4 \tan^3 x}{1 - 3 \tan^2 x}$$

Rewrite $3x$ as $2x + x$ and use the Addition Formula for Tangent to simplify.

$$4 \tan 3x = 4 \tan(2x + x)$$

$$= \frac{4 \left(\frac{\tan 2x + \tan x}{1 - \tan 2x \tan x} \right)}{1 - \tan 2x \tan x}$$

Use the Double-Angle Formula for Tangent to simplify.

$$= \frac{\frac{4 \tan 2x + 4 \tan x}{1 - \tan 2x \tan x}}{(1 - \tan^2 x) - \tan 2x \tan x}$$

$$= \frac{4 \tan x + 8 \tan x}{(1 - \tan^2 x) - \tan 2x \tan x}$$

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6. -/3 points

SPreCalc6 7.3.083.

Verify the identity.

$$49 \cos^4 x - 49 \sin^4 x = 49 \cos 2x$$

Factor the expression, and then use a Pythagorean Identity and a Double-Angle Formula to simplify.

$$49 \cos^4 x - 49 \sin^4 x = (49 \cos^2 x + 49 \sin^2 x)(7 \cos^2 x - 7 \sin^2 x)$$

$$= 7(7 \cos^2 x - 7 \sin^2 x)$$

$$=$$

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7. -/3 points

SPreCalc6 7.3.085.

Prove the identity.

$$\frac{\sin x + \sin 3x}{\cos x + \cos 3x} = \tan 2x$$

Use the Sum-to-Product Formulas and then simplify.

$$\begin{aligned} \frac{\sin x + \sin 3x}{\cos x + \cos 3x} &= \frac{2\left(\right)}{2 \cos 2x \cos x} \\ &= \frac{}{\cos 2x} \\ &= \end{aligned}$$

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8. -/3 points

SPreCalc6 7.3.087.

Prove the identity.

$$\frac{\sin 10x}{\sin 6x + \sin 4x} = \frac{\cos 5x}{\cos x}$$

Use the Double-Angle and Sum-to-Product Formulas for Sine and simplify.

$$\begin{aligned} \frac{\sin 10x}{\sin 6x + \sin 4x} &= \frac{2\left(\right)}{2\left(\right)} \\ &= \end{aligned}$$

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9. -/5 points

SPreCalc6 7.3.089.

Prove the identity.

$$\frac{\sin 9x + \sin 2y}{\cos 9x + \cos 2y} = \tan\left(\frac{9x + 2y}{2}\right)$$

Use the Sum-to-Product Formulas and then simplify.

$$\begin{aligned} \frac{\sin 9x + \sin 2y}{\cos 9x + \cos 2y} &= \frac{2\left(\right)}{2\left(\right)} \\ &= \frac{\sin\left(\right)}{\cos\left(\right)} \\ &= \end{aligned}$$

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10. -/1 points

SPreCalc6 7.3.090.

Prove the identity.

$$\tan y = \frac{\sin(x + y) - \sin(x - y)}{\cos(x + y) + \cos(x - y)}$$

This answer has not been graded yet.

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