

MATH. 125, QUIZ 10 - Section 5.4 and part of 5.5 (25points = 5% final grade)

Show your work. You may get extra/bonus credit for presenting and explaining your solutions in a professional way (like in the textbook). NO calculator allowed.

1. (5 points) Verify the following trigonometric identity

$$\frac{\sin 2\alpha + \sin 4\alpha}{\cos 2\alpha + \cos 4\alpha} = \tan 3\alpha$$

2. (5 points) Write $\cos(5\alpha)\cos\alpha$ as a sum of cos functions.

3. (5 points) Find exact value of the following expression; simplify. Hint: using sum-to-product formula or product-to-sum formula will greatly simplify the calculations.

$$\sin \frac{\pi}{12} + \sin \frac{7\pi}{12}$$

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4. Solve the following equations for $0 \leq x < 2\pi$

(a) (5 points)

$$\sin x = -\frac{\sqrt{3}}{2}$$

(b) (7 points)

$$\cos 3x = \frac{1}{2}$$