

Name: \_\_\_\_\_

GTID: \_\_\_\_\_

Answer the questions in the spaces provided and put your answer in the BOX. Organize work clearly and simplify answers for full credit.

1a. Find the exact values:  $\cos\left(\frac{\pi}{3} + \frac{\pi}{4}\right)$  and  $\sec\left(\frac{\pi}{3} + \frac{\pi}{4}\right)$

$\cos \theta =$	
$\sec \theta =$	

1b. Given that  $\tan u = \frac{3}{4}$ , with  $u$  in quadrant III, and  $\sin v = \frac{5}{13}$ , with  $v$  in quadrant II, find the exact value of  $\sin(u + v)$ .

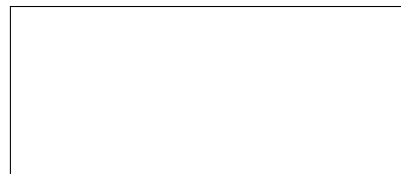
1c. Find the exact value:  $2 \sin\left(-\frac{\pi}{8}\right) \cos\left(-\frac{\pi}{8}\right)$

1d. Use the half angle identity to find:  $\sin(22.5^\circ)$

1e. Simplify:  $(1 + \tan \theta)(1 - \tan \theta) + \sec^2 \theta$



1f. Find all solutions in the interval  $[0, 2\pi]$  of:  $\sin(2x) = -\frac{\sqrt{3}}{2}$



2. Use power-reducing formulas to rewrite the expression so that it does not contain trigonometric functions of power greater than 1.

$$\cos^4 x$$

3. Verify the identity.

$$\tan^2 x - \sin^2 x = \sin^4 x \sec^2 x$$

4. Solve the equation for all values in the range  $[-2\pi, 2\pi]$ .

$$(1 - \sin x)(1 + \sin x) = 0$$

5. Find the exact value:  $\sin(165^\circ) \cdot \cos(45^\circ)$

*Hint: use the product-to-sum formula.*

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