

Show all your work for full credit (use additional paper if necessary). Unsupported answers = 0 points. **Use proper form for the identities.**

1. Prove the identity: $\frac{\cos(x)}{1-\sin(x)} = \sec(x) + \tan(x)$

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2. Prove the identity: $\frac{\sin(\theta)}{1+\cos(\theta)} + \frac{1+\cos(\theta)}{\sin(\theta)} = 2 \csc(\theta)$

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3. Find the exact value of $\cos(-105^\circ)$

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4. Given that $\sin(\theta) = \frac{-5}{8}$ and θ is in quadrant IV, find exact values for

a) $\sin(2\theta)$

[/2]

b) $\sec\left(\frac{\theta}{2}\right)$

[/2]

5. Write $\cos^4(x) \sin^2(x)$ in terms of cosine functions raised to the first power.

[/3]

6. Write $5 \cos(3x) - 4 \sin(3x)$ as a single sine function. Use the exact amplitude, but round the phase shift to four decimal places.

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