

Practice Midterm Exam 11/12

You have 60 minutes. Please show all your work; if I can't follow your logic, I can't give you partial credit. Your answers for all questions should be exact numbers with no decimals.

1. (25 pts) Verify the identity $\tan x(1 - \sin^2 x) \sec x = \sin x$.

2. (25 pts) Find the amplitude or stretch factor, phase shift, and period for the function

$$f(x) = 8 \sin(3x + \pi) - 3.$$

3. (25 pts) Find exact values for $\cos(\pi/3 + \pi/4)$ and $\sin(\pi/3 + \pi/4)$.

4. (25 pts) Find $\sin(2\theta)$, $\cos(2\theta)$, and $\tan(2\theta)$ if $\sin \theta = 1/4$ and θ lies in quadrant 2. Do not calculate θ explicitly.