

For full credit, show all steps using correct notation. Unless otherwise indicated, present exact values of all answers.

1. (5 points) Compute the exact value of $\sin \frac{x}{2}$ given that $\cos x = \frac{7}{9}$.
2. (5 points each) Solve each of the following equations.
 - a) $\sin 3x - \cos 3x = -1$
 - b) $\cos x - \cos 2x = 1$
3. (5 points) Solve the triangle $a = 10$ in, $b = 7$ in, and $\beta = 36^\circ$.
4. (5 points) Compute the exact value of the area of a triangle with sides 5, 8, and 9 units.
5. (5 points) Prove the identity $\cos\left(x + \frac{\pi}{3}\right) + \cos\left(x - \frac{\pi}{3}\right) = \cos x$.
6. (5 points) Find $\underline{a} - 2\underline{b} + \underline{c}$ given the vectors \underline{a} , \underline{b} , and \underline{c} .

