1. Use the following identity to answer the questions below.

\[ a \cos(Bx) + b \sin(Bx) = A \cos(Bx - C) \]

where

\[ A = \sqrt{a^2 + b^2} \quad \text{and} \quad \tan(C) = \frac{b}{a} \quad \text{with} \quad \frac{-\pi}{2} < C < \frac{\pi}{2} \]

Let \( f(x) = \cos(4x) + \sqrt{3}\sin(4x) \)

a. Express \( f(x) \) as a single cosine function.

b. Determine the amplitude, period, phase shift, \( x \) intercepts, \( y \) intercept, relative maximums, and relative minimums.

c. Graph \( f(x) \).

2. A Global Positioning System satellite orbits 10,900 feet above the earth’s surface. Find the angle of depression from the satellite to the horizon. Assume the radius of the earth is 4,000 miles.