Problem: Sound Waves Across Lake Tai

Wuxi's Lake Tai is known for its serene beauty. During a cultural festival in Wuxi, a traditional musical performance is held on one side of the lake. It's said that the sound waves of the musical instruments travel across the water in a pattern that can be modeled by trigonometric equations.

The sound wave of a particular instrument can be modeled by the equation $y=3\sin(2x)$. Find the first two positive values of x for which the sound wave reaches its maximum amplitude.

Another instrument produces sound waves modeled by $y=4\cos(x-\pi/3)$. Determine the first positive value of x where the sound wave reaches its minimum amplitude.

A curious student observes that at a certain point on the other side of the lake, the combined sound from both instruments results in complete silence. If this phenomenon is due to the interference of the two waves, find the smallest positive value of x for which this happens.

Suzhou Monthly Temperature Variation Problem

Suzhou, a city in Jiangsu, China, experiences a temperate climate with warm summers and cool winters. A local meteorologist has recorded the average monthly temperatures in Suzhou over a year as follows:

Month	Average Temperature (°C)
Jan	4
Feb	6
Mar	10
Apr	16
May	21
Jun	25
Jul	28
Aug	27
Sep	23
Oct	18
Nov	12
Dec	6

a) Plot the given data on a graph with months on the x-axis and temperature on the y-axis.
b) Using trigonometric functions, fit a curve to the data to model the temperature variation in Suzhou over the year.
c) Determine the equation of the curve and use it to predict the average temperature in Suzhou for any given day of the year.
d) Analyze the amplitude, period, and phase shift of the trigonometric function to understand the temperature trends in Suzhou