1. “Horizontal shift” identities.
Graph \(y = \sin x\) and \(y = \cos x\) on the same axes.
Predict a shift for \(y = \cos x\) to superimpose it on the graph of \(y = \sin x\).
Shift = ______________
Formula of shifted function: \(y = \cos(x ______________)\).
Now graph your new function. Does it work?
Conclusion: \(\sin x = \cos(x ______________)\)
Likewise \(y = \sin x\) can be shifted ______________ to superimpose it on \(y = \cos x\).
Formula of shifted function: \(y = \sin(x ______________)\). Graph it to check!
Conclusion: \(\cos x = \sin(x ______________)\)

2. Let’s solve a trigonometric equation three different ways.
Solve: \(2 \cos(2x) = 1\) for \(0 \leq x \leq \frac{\pi}{2}\).
1. Algebraically (get exact solution):
\[x = ______________\]
2. Graphically (get approximate solution):
\[x \approx ______________\]
3. By calculator (use \(\cos^{-1}\)):
\[x \approx ______________\]

3. Find the equation of a cosine curve \(f(t) = a \cos(bt + c) + d\) with period 24, minimum value 48, maximum value 72, and maximum value occurring at \(t = 15\).
Find \(d\):
Find \(a\):
Find \(b\):
Find \(c\):
/over
Equation is: \( f(t) = \cos(t) + \) 

What is \( f(0)? \) \( f(0) = \) 

Suppose now that this function represents average temperature \( t \) hours after midnight at a certain time of the year. At what time(s) of the day is the average temperature equal to \( 66^\circ? \)

Times: 

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