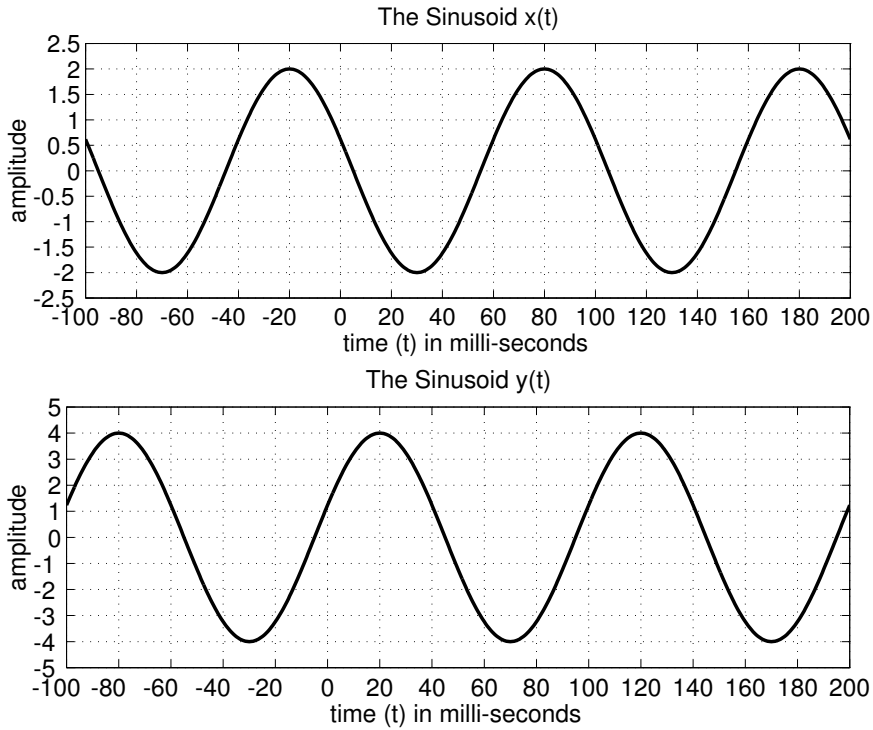
PROBLEM:

Consider the sinusoidal signals $x(t)$ and $y(t)$ plotted below.



(a) Determine A, f_0, and ϕ in the representation of $x(t)$ as $x(t) = A\cos(2\pi f_0 t + \phi)$.

$A =$_____. $\phi =$_____. $f_0 =$_____. (in Hz)

(b) Now suppose that $B\cos(\omega_0 t + \psi) = x(t) + 2\cos(\omega_0 t)$. Determine B, ω_0, and ψ.

$B =$_____

$\omega_0 =$_____

$\psi =$_____

(c) The signal $y(t)$ can be expressed in terms of $x(t)$. That is, we can write $x(t) = Cy(t - t_1)$. Determine the numerical values of the scale factor C and the time shift t_1, where $t_1 \geq 0$.

$C =$_____ $t_1 =$_____