//Alan Solitar

Writing Part

prob 1.
I= I(x)
n = n(x) = εsin(ωx)
I = I(x) + n(x)
I = I(x) + εsin(ωx)

I' = I'(x) + (ω)εcos(ωx)

I' = I'(x) + ωεcos(ωx)

I'(x) vs I'(x) + ωεcos(ωx)

This shows that depending on the value of ω, the noise can cause a very significant change to the value of the signal.

prob 2.

//not so sure about the solution but I tried to play
around the equation a bit

Equation of Line:
xcosθ+ ysinθ = ρ

you can make some substituations and get an equation in terms of sin

cosθ = adj/hyp = x/ρ

x^2ρ + ysinθ

In this case y should be the amplitude and i believe the phase should be affected by some multiple of x

I believe that the period of all these sinusoids should be the same, meaning 2π. So it does not change regardless of x,y.