ECE 232 – LAB 1 (FUNDAMENTALS)

PROCEDURE:

NOTICE: JUST ONE TIME YOU'LL DO AUTO-SET ON OSSCILOSCOPE.(observation of the sinusoidal signals)!!!!

*There are two sinusodial signals given as;

$X(t) = 4sin(2000\,\pi t)\,\{CH2\}$ and $Y(t) = 8sin(4000\,\pi t)\{CH1\}$

Set X(t) to channel 1 of your ossilloscope and y(t) to channel 2.

1-) Plot X versus Y for the given (Time/Div:250 µs)

Set ***Trig menu-Source-CH2*** (CH2 will be stable so; you 'll change the properties of CH1.)

* It will be adjusted frequencies and times as you given below;

Hint: you must calculate the frequency first.

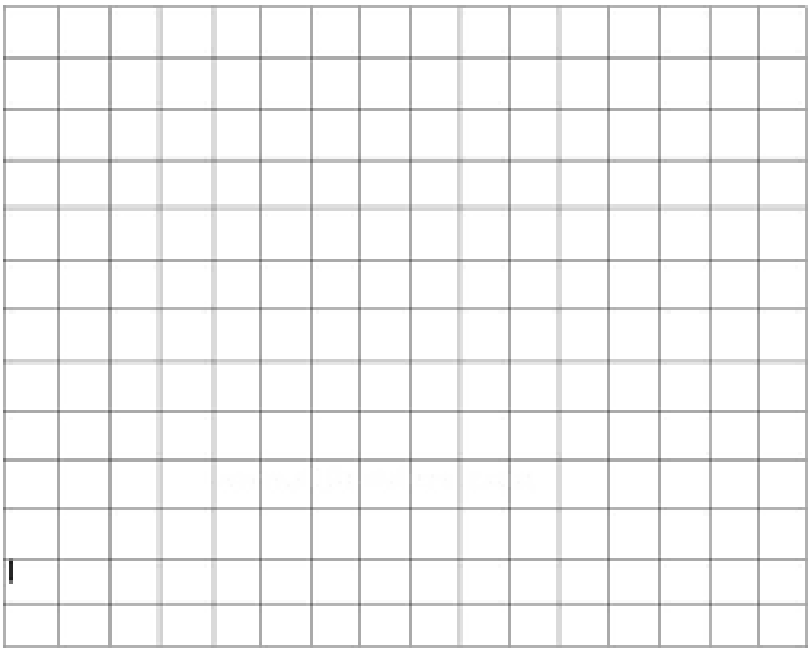
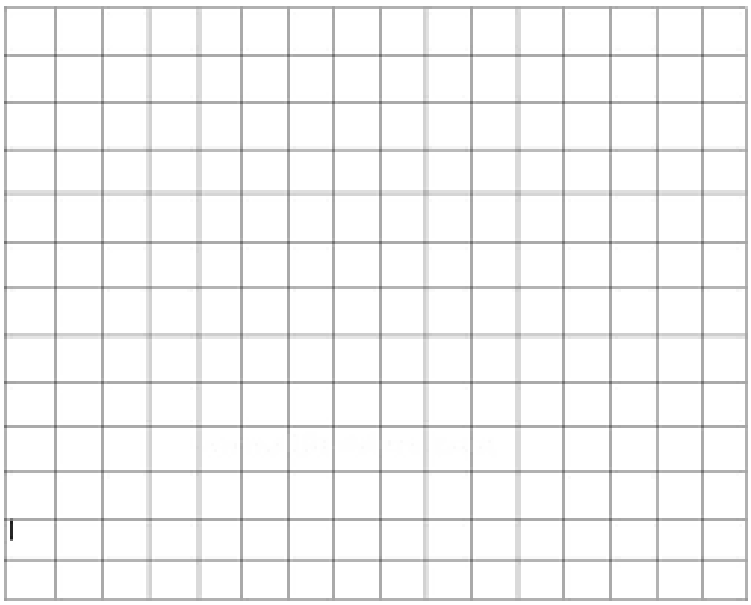


Figure 1:_____

2-) (CH1: 10kHz and CH2: 1kHz) --- (Time/Div=100 µs)

PLOT:



3-) PHASE ;

$X(t) = 8sin(4000\pi t + 45°)$ and $Y(t) = 4sin(2000\pi t)$ & Period of CH2 ''1ms'' (T=1/f)

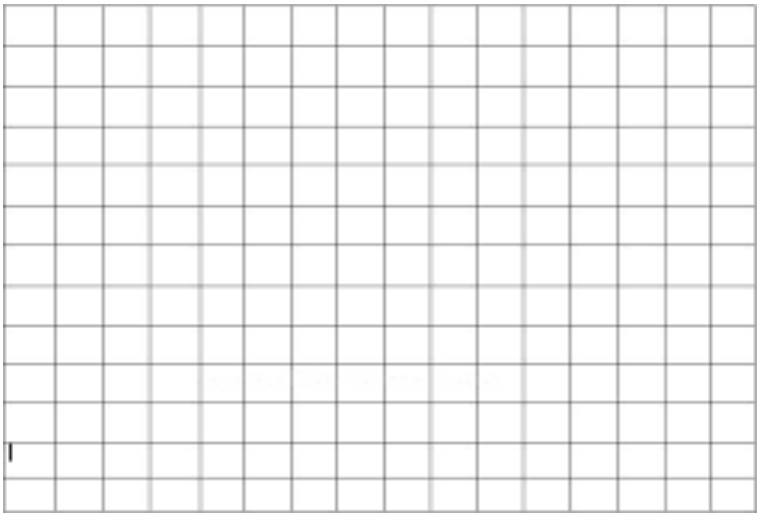
METHODS OF ''3'' !!!

(Cursor—Type –Time) After that ; you will adjust positions of this cursors up to top of the signals.You'll see the difference this cursors on the right side of OSCILLOSCOPE.(Delta)

360° ------1ms

?? °---------Δ (you've find).

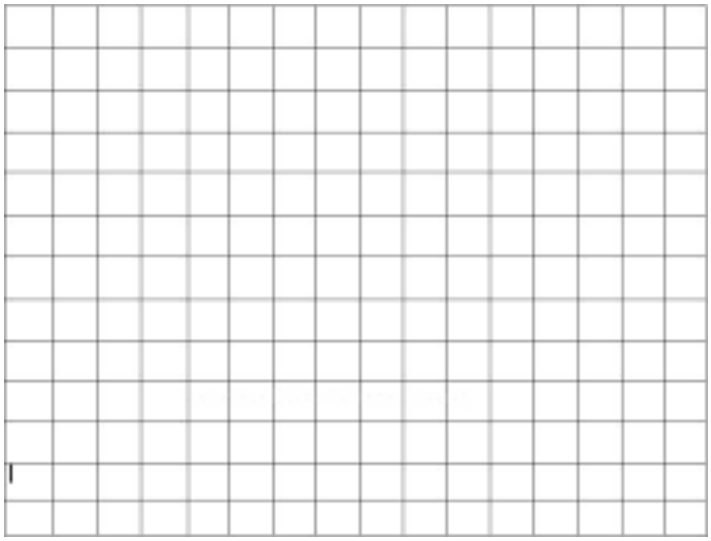
?? is PHASE.



4-) PHASE DIFFERENCE;

- **a)** Set vertical position to ''0'' .
- **b)** Display Format (YT to XY) (Volt/Div=500mV and Second/Div=250µs). You'll get a phase degree. (Hint: $arcsin\ (X/Y)$)

PLOT;

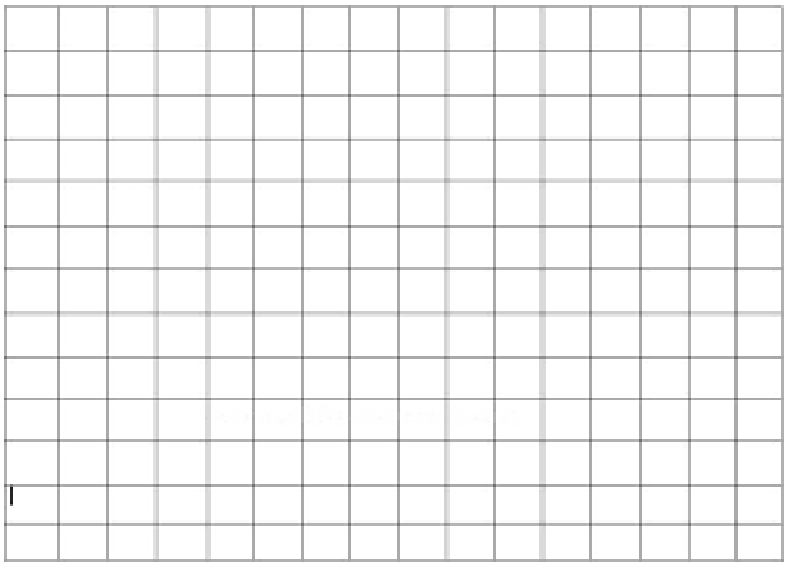


And you will bring it back to its previous state.(YT to XY)

5-) OBSERVATION OF AMPLITUDE DIFFERENCE USING PHASE

CH1; $X(t) = Bsin(4000\pi t + 90°)$ and 8 Vpp , CH2; $Y(t) = Asin(2000\pi t)$ and 4 Vpp

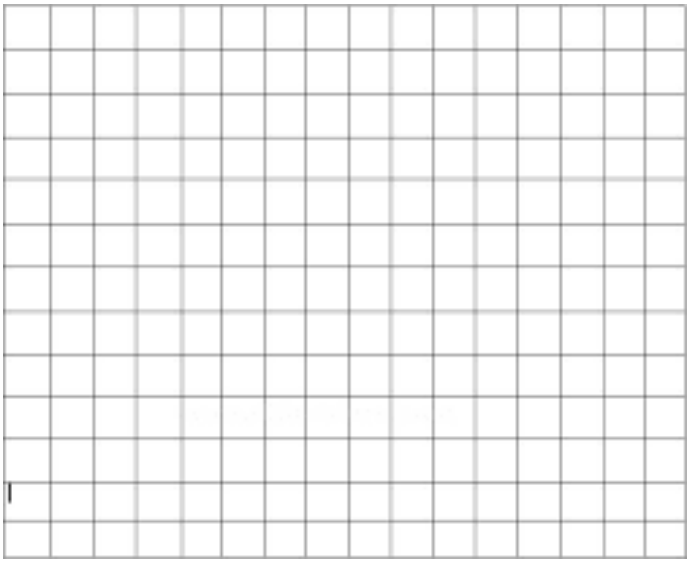
Time/Div=250 µs.



6-) SQUARE AND TRIANGULAR WAVES

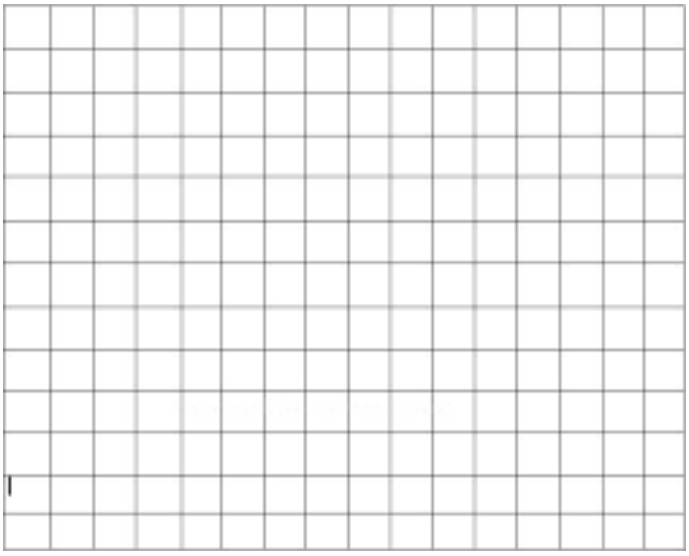
Time/Div=250 µs.

For; 1 kHz Square Wave (4Vpp)



Instead of square wave if triangular wave is given to the circuit, what will happen? Plot the input and output waveforms.

1kHz Triangular Wave(6Vpp)



GOOD LUCK (☺)