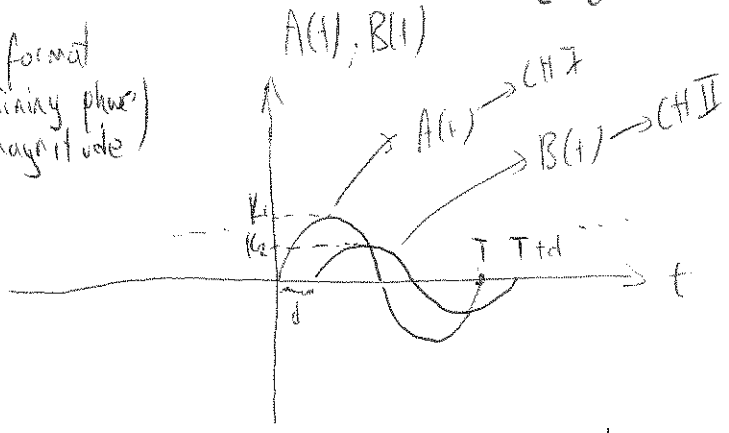
ECE 232 Lab-4

YT format (determining phase and magnitude)



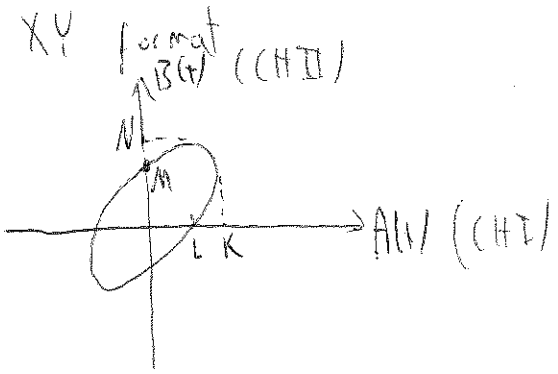
$\angle A - \angle B = \theta = \frac{d}{T} \times 360$ [A is leading B with θ degrees]

$H_1(j\omega) = \frac{A(j\omega)}{B(j\omega)} \Rightarrow \angle H_1(j\omega) = \angle A(j\omega) - \angle B(j\omega) = \theta$ (positive)

$H_2(j\omega) = \frac{B(j\omega)}{A(j\omega)} \Rightarrow \angle H_2(j\omega) = \angle B(j\omega) - \angle A(j\omega) = -\theta$ (negative)

$|H_1(j\omega)| = \frac{K_1}{K_2}$ $\quad |H_2(j\omega)| = \frac{K_2}{K_1}$

XY format (CH II)

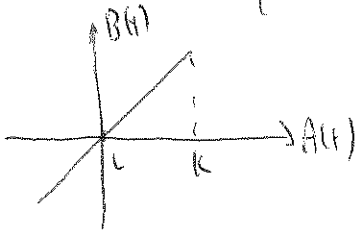


$\theta = \text{Arc Sin}\left(\frac{M}{N}\right) = \text{Arc Sin}\left(\frac{L}{K}\right)$

↳ can be negative or positive

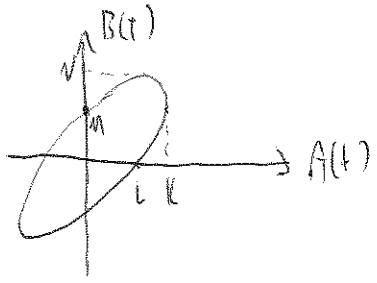
Various possible XY formats

(1)



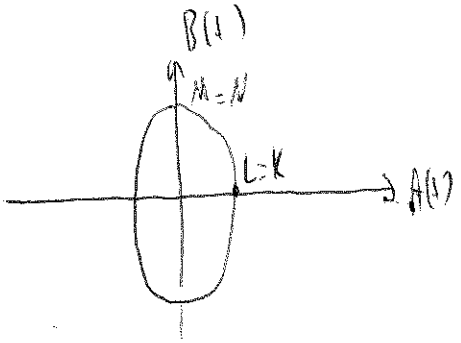
$\theta = \text{Arc Sin}\left(\frac{L}{K}\right) = \text{Arc Sin}\left(\frac{0}{K}\right) = 0°$

(2)



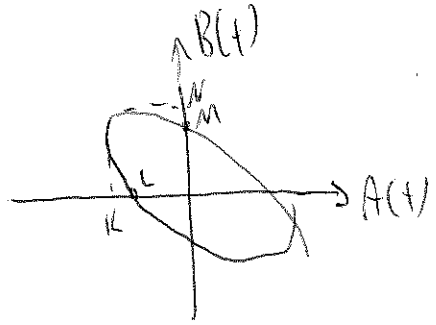
$0° < \theta < 90°$ or $-90° < \theta < 0°$

(3)



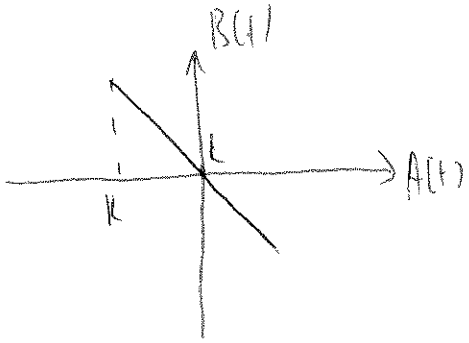
$\theta = \text{Arcsin}\left(\frac{M}{N}\right) = \text{ArcSin}\left(\frac{L}{K}\right) = 90°$

(4)



$90° < \theta < 180°$ $-180 < \theta < -90$

(5)



$\theta = 180°$