

EE 206: Homework #8

Sinusoidal Source, Complex Numbers, Complex Impedance. Due Monday, November 2nd

Please make the subject "EE 206 HW#8" if submitting homework electronically to lauren.n.singelmann@ndsu.edu (or on blackboard)

Sine Waves

1) Convert to V_p , V_{pp} , V_{rms}

V_p (peak)	V_{pp} (peak-to-peak)	V_{rms}
$20V_p$		
	$20V_{pp}$	
		$20V_{rms}$

Complex Numbers:

2) Find Y as a complex number

$$2a) \quad Y = \left(\frac{7+j2}{1+j8} \right) + \left(\frac{5-j5}{8+j8} \right)$$

$$2b) \quad Y = \left(\frac{100(s+7)}{s(s+2)(s+20)} \right)_{s=j5}$$

$$2c) \quad Y = \left(\frac{2s^2+5s+40}{s^3+6s^2+11s+6} \right)_{s=j5}$$

Phasor Voltages

3) Express V in phasor form and simplify (V should wind up being a complex number)

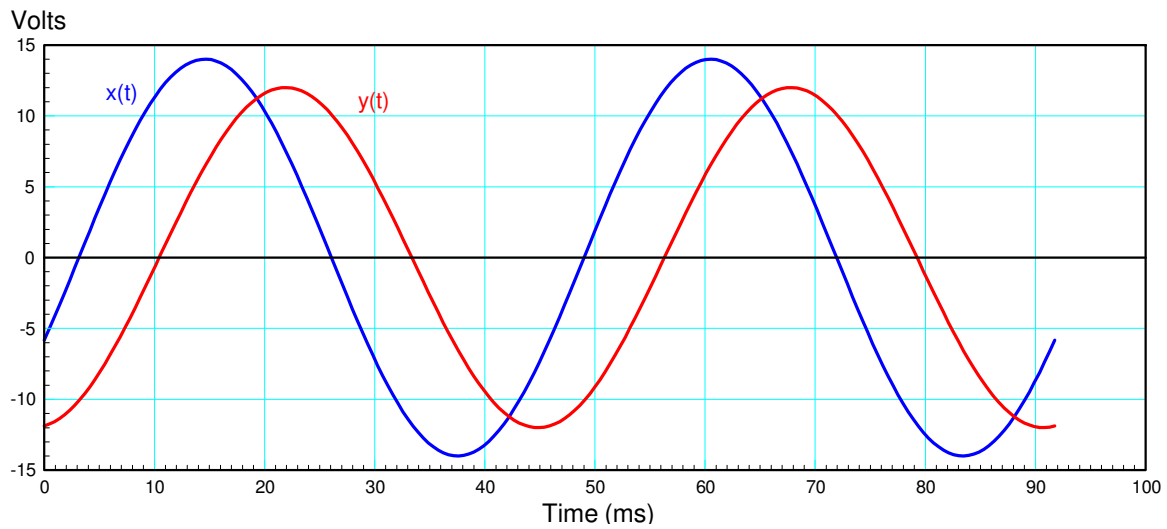
$$a) \quad V = 2 \cos(10t) + 3 \sin(10t)$$

$$b) \quad V = 7 \cos(20t - 70^\circ) + 9 \cos(20t + 65^\circ)$$

$$c) \quad V = 7 \cos(5t + 40^\circ) - 9 \sin(5t)$$

4) For the following waveforms, determine

- The frequency in rad/sec
- The phasor representation for X and Y



Problem 4 & 5

5) Assume $Y = G \cdot X$. Determine frequency and the phasor representation for G