PURDUE UNIVERSITY NORTH CENTRAL

Electrical & Computer Engineering Technology Department

ECET 157 (Prof. Smith) **Spring, 2009**

MATH REVIEW - - SINE WAVES.

Part A - We'll Go Over this Together.

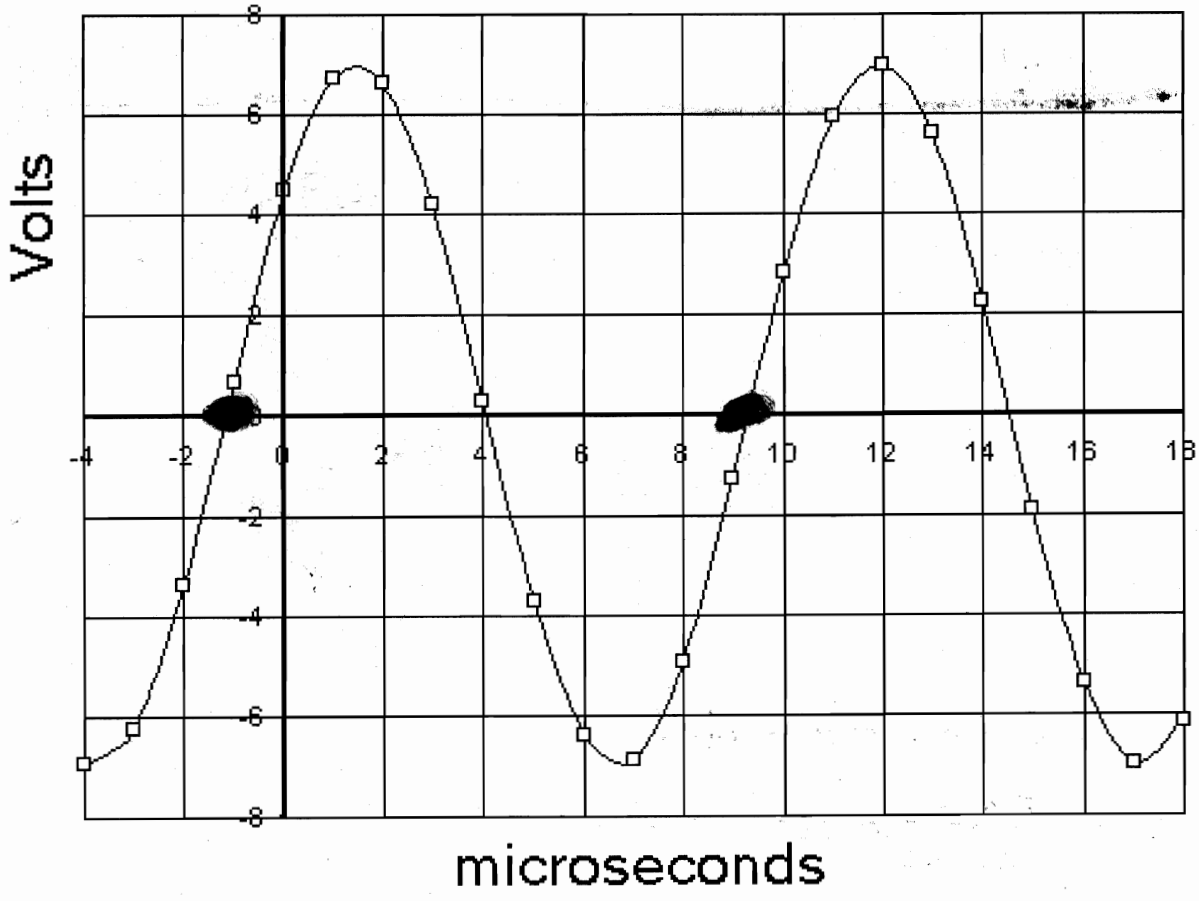
A. For the signal below, determine the following. $V_{dc\ offset}$ = 0 v V_{ampl} = 7 v

V_{rms} = 5 v V_{pk} = 7 v V_{p-p} = 14v V_{ave} = 0v

f = 100K Hz period = 10µs phase shift = -36 ° ω = 628K rad/s

Write the time domain equation for the signal. v(t) = $7\sin(628K\,t + 36°)$

Write the phasor notation for the signal. $\bar{V}$ = $5 \angle -36°$



Part B - Work in Groups.

A. For the signal below, determine the following. $V_{dc\ offset}$ = 3 V V_{ampl} = 12 V

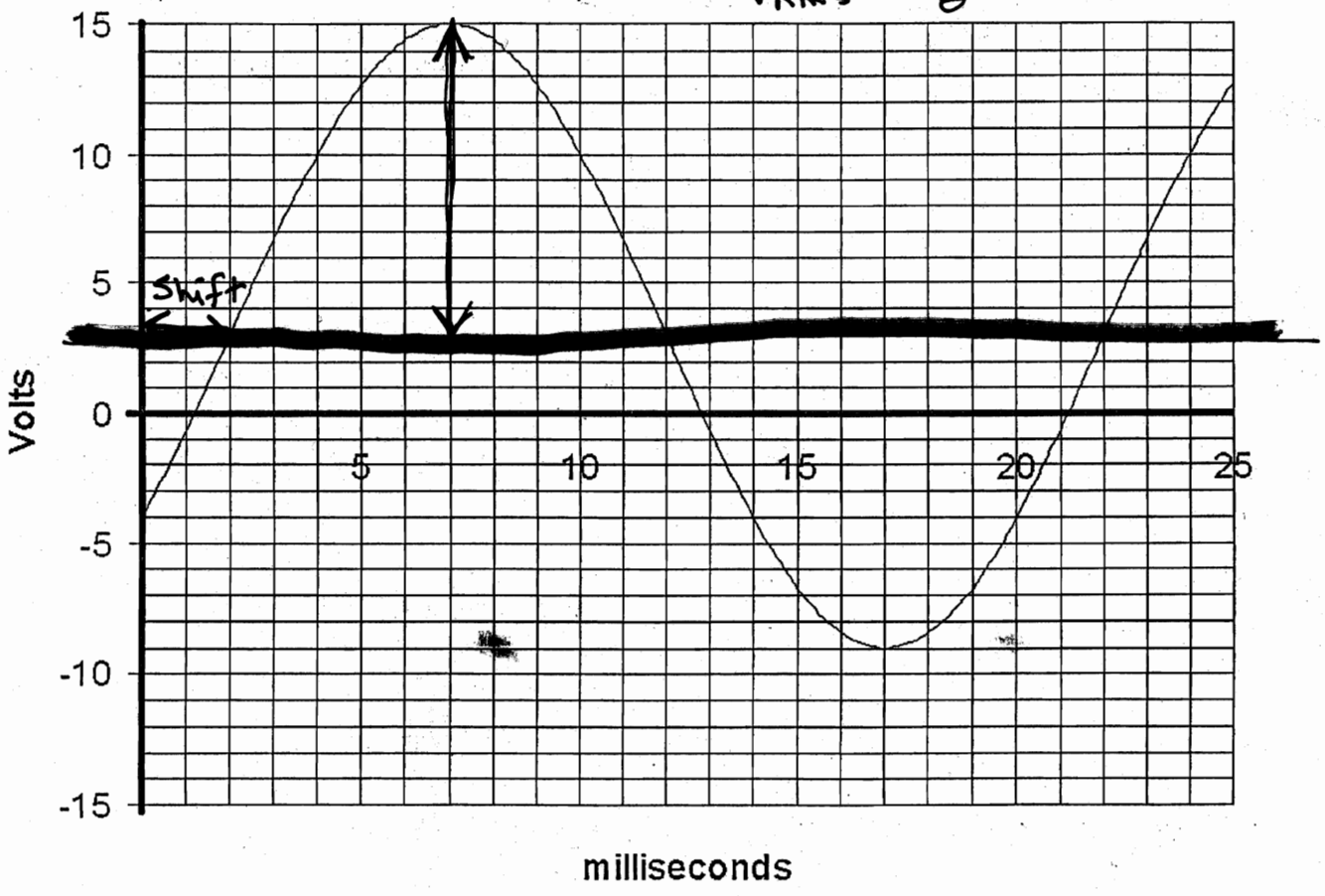
V_{rms} = 8.5 V V_{pk} = 15 V V_{p-p} = 24 V (15 − −9) V_{ave} = 3 V

f = 50 Hz period = 20 ms (20 sq * 1 ms = 20 ms) phase shift = +36° ω = 314 rad/s

0.707 * V_{ampl} → V_{rms} ; $\frac{1}{T}$ → f

Write the time domain equation for the signal. v(t) = $12 \sin(314t - 36°) + 3\,V$ (3 V: DC offset)

Write the phasor notation for the signal. $\overline{V}$ = $8.5 \angle +36°$ (V_{Rms}, θ)



FIRST: REDRAW x-axis!

$\theta = \frac{+2ms}{20ms} * 360° = +36°$

$\omega = 2\pi f = 2\pi * 50 = 314$