EXAMPLE 10.3-2   p 420
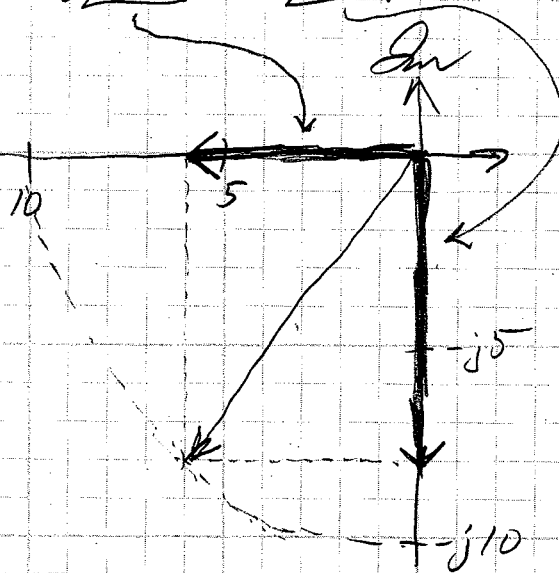
DONE VIA PHASORS

$i(t) = -6 \cos 2t + 8 \sin 2t$: MAKE ALL COEF. POSITIVE, ALL cos PHASE

$= 6 \cos(2t + 180°) + 8 \cos(2t - 90°)$ TRIG ID'S (SEE APP. C FOR SOME)

$\vec{I} = 6\angle 180° + 8\angle -90°$ DO THE PHASOR TRANSFORM

LOOK AT THE SUM

AND IMAGINE THE

RESULT

GUESS MAG ≈ 10

ANGLE = -90 + (-30) ≈ -120°

NOW CALCULATE IT:

$\vec{I} = (-6 + j0) + (0 - 8j)$ CONVERT TO RECT. COORD.

$\vec{I} = (-6 - 8j)$ ADD

$|\vec{I}| = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$ FIND MAG.

$\angle I = \tan^{-1} \frac{-8}{-6} = \tan^{-1} \frac{4}{3} = 53.1°$ FIND ANGLE — NOTE, $\tan^{-1}$ GAVE WRONG QUADRANT!

$\angle I = 53.1 - 180° = -127°$

$\vec{I} = 10 \angle -127°$ CONVERT TO POLAR

$i(t) = 10 \cos(2t - 127°)$ ⟵ ANSWER, DO INVERSE PHASOR TRANSFORM