P1 If $v(t) = 160 \cos 50t$ V and $i(t) = -20 \sin (50t - 30°)$ A, calculate the

a) **Instantaneous power**. Simplify the product of sinusoids to a single sinusoid plus a constant term.
Hint: there is a +800 in the answer

b) **Average power**.
Hint: between 500W and 1kW

P2 **Concept:** phasors and power analysis
Find: In the circuit below, $i_s = 3\cos(10^3 t)$ A. Find the average power absorbed by the 50-Ω resistor.
Hint: First digit of answer is a 6.
You can use mesh (make the two currents i_s and i_x, so the right loop is a function of these two; this way you don't introduce extra variables) or nodal analysis. Either way there's only one standard equation plus one for the dependent source. I use nodal in the solutions.