Exam 1 Practice

Problem 1
Use Simple Circuit Methods (KVL, KCL, CDR, VDR, and Ohm’s law) only to determine the power $P_{4\Omega}$ of the $4\Omega$ resistor. (Answer: 16W) Is the power active or passive?

Problem 2
Using Simple Circuit Methods (KVL, KCL, CDR, VDR, and Ohm’s law) only to determine the current $i_x$. (Answer: $-5.14 \text{ A}$)

Problem 3
Find the current $i_3$ through the $4\Omega$ resistor using Node Analysis only! (Answer: -0.68 A) Find the current $i_3$ through the $4\Omega$ resistor using Mesh Analysis only!
Problem 4
a. Find the voltage $v$ across the $4\Omega$ resistor using Thévenin’s theorem.
b. Find the power delivered to the $4\Omega$ resistor. Is maximum power delivered to the $4\Omega$ resistor? Explain your reasoning using short concise sentences. (Answers: $4.0\text{ V}$, $4.0\text{ W}$)

Problem 5
Determine the current $i_0$ for the circuit. Assume that the operational amplifiers are ideal.
Solution: $2.5\text{ mA}$