Ralph's aggregate accounts

This is a continuation of Ralph's structure. Everything remains the same except the changes in account balances are

Account	x
Cash	50
Receivables	30
Inventory	(30)
PPE	10
Payables	(50)
Sales	(70)
Cost of sales	30
SG&A	30

Required:

1. Can you find a vector $y \geq 0$ such that $Ay = x$?

2. Can you find a vector λ such that $A^T \lambda \geq 0$ and $\lambda^T x < 0$? (Hint: the theorem of the separating hyperplane says only one of these conditions in 1 or 2 can be met.)

3. Aggregate the accounts into two accounts such that all the debits (arrows going in) point to a negative aggregate account balance and all the credits (arrows going out) point to a positive aggregate account balance.

4. Revisit Ralph's bounds to recognize $\lambda^T x$ is the objective function value for the dual program to either min y_j or max y_j. What does this indicate about the relation between the dual program and aggregate account balances?