

Complete the following problems. Be sure to show your work for partial credit.

1. Mano and Kime 1-11.
2. Prove the following *consensus* theorem true, once using a truth table and once through algebraic manipulation: $(X \cdot Y) + (Y \cdot Z) + (\overline{X} \cdot Z) = (X \cdot Y) + (\overline{X} \cdot Z)$
3. Mano and Kime 2-7.
4. Mano and Kime 2-8.
5. Design a majority circuit. This circuit has three inputs, A , B , and C . Its output, F is true if two or more of the inputs are true and is false otherwise.
 - (a) List a truth table for the majority circuit.
 - (b) Express F as a SOP.
 - (c) Minimize F using algebraic manipulation.
 - (d) Draw the schematic (circuit diagram) for the minimized F .
6. Mano and Kime 2-12.