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For exclusive use of adopters of the book *Digital Design Principles and Practices*, Fourth Edition, by John F. Wakerly, ISBN 0-13-186389-4.

3e7.20 7.205 This can be done algebraically. If all of the input combinations are covered, the logical sum of the expressions on all the transitions leaving a state must be 1. If the sum is not 1, it is 0 for all input combinations that are uncovered. For double-covered input combinations, we look at all possible pairs of transitions leaving a state. The product of a pair of transition equations is 1 for any double-covered input combinations.

(a) State D, $Y = 0$ is uncovered.

(b) State A, $(X+Z') = 0$ is uncovered. State B, $W = 1$ is double-covered; $(W+X) = 0$ is uncovered. State C, $(W+X+Y+Z) = 0$ is uncovered; $(W \cdot X + W \cdot Y + Z \cdot Y + Z \cdot X) = 1$ is double covered. State D, $(X \cdot Y + X' \cdot Z + W \cdot Z) = 0$ is uncovered; $(W \cdot X' \cdot Z + W \cdot X \cdot Y \cdot Z) = 1$ is double-covered;