8

Construct a truth table for the following Boolean function.

1. Do not simplify the expression.
2. You must list all necessary columns.

$$F = (\overline{x} + \overline{yz})(\overline{x} + y)$$

9

Fully simplify the following logical expression. In each step you must identify law or theorem used. Show all steps.

$$B(A + CD) + \overline{((\overline{A} + B)(\overline{B} + C)(\overline{B} + D))}$$

	STEPS	POSTULATE/THEORE
1		
.		
.		

10

Use Karnaugh Maps to simplify the following logical function

a) in **POS** form

$$F = \overline{A}\ B\ C\ D + \overline{A}\ \overline{B}\ C\ D + \overline{A}\ B\ \overline{D} + \overline{C}\ D$$

b) in **SOP** form

$$X(A, B, C, D) = \sum (0, 1, 2, 4, 5, 7, 8, 9, 10, 12, 14)$$

$$X(A,\ B,\ C,\ D) = \sum (0,\ 1,\ 2,\ 4,\ 5,\ 7,\ 8,\ 9,\ 10,\ 12,\ 14)$$

11

Draw the equivalent logic circuit for the following function. You can use the following gates: OR, AND, NOT. There is no limit on number of inputs

Do **not** simplify the expression.

$$F = \overline{A + (B + C)\left(\overline{A} + \overline{B}\right)}$$