ECE 27000 Spring-22
Practice Problems 4

Note: The problems below will allow you to practice the material covered in week 4. A homework will be available separately. Do not attempt to submit practice problems for grading.

Solve the following problems.

1. Show that the following two functions are the same by writing the canonical sum for each one. Reminder: The canonical sum is unique.
   $F1(X, Y, Z) = X' \cdot Z' + X \cdot Y' + Y \cdot Z$
   $F2(X, Y, Z) = X' \cdot Y + X \cdot Z + Y' \cdot Z'$

2. Enter the function $F(X1, X2, X3, X4, X5) = \sum(5, 7, 13, 15, 21, 23, 29, 31)$ into the 5-variable K-map given below, and find a prime implicant of the function. Circle it in the K-map, and write a sum term for it.

X4 X5 \ X1 X2 X3	000	001	011	010	110	111	101	100
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Note: The function has a single prime implicant. To find it, write implicants of the function and combine them using the theorem $X \cdot Y + X \cdot Y' = X$.