

For these test cases input x' as  $\sim x$  and xyz as  $(x*y*z)$

Test Case 1:

Number of Variables: 2

Names: var1, var2

Truth Table Final Column (Top to Bottom): 0011

K-Map: 00

11

Input Expression:  $\text{var1var2}' + \text{var1var2}$  or  $(\text{var1}' + \text{var2}') * (\text{var1}' + \text{var2})$

Minimized Expression: var1

Test Case 2:

Number of Variables: 3

Names: a,b,c

Truth Table Final Column (Top to Bottom): 00101101

K-Map: 0001

1110

Input Expression:  $a'bc' + ab'c' + ab'c + abc$

Minimized Expression:  $a'bc' + ab' + ac$

Test Case 3:

Number of Variables: 4

Names: a,b,c,d

Truth Table Final Column (Top to Bottom): 0111011000010101

K-Map: 0111

0101

0010

0110

Input Expression:  $a'b'c'd + a'b'cd + a'b'cd' + a'bc'd + a'bcd' + abcd + ab'c'd + ab'cd$

Minimized Expression:  $a'b'd + a'b'c + a'c'd + a'cd' + acd + ab'd$

Test Case 4:

Number of Variables: 5

Names: r1,r2,r3,r4,r5

Truth Table Final Column (Top to Bottom): 10000000100000001000000010000000

K-Map: 10000000

10000000

10000000

10000000

Input Expression:  $r1'r2'r3'r4'r5' + r1'r2 r3'r4'r5' + r1r2 r3'r4'r5' + r1r2' r3'r4'r5'$

Minimized Expression:  $r3'r4'r5'$

Test Case 5:

Number of Variables: 6

Names: a,b,c,d,e,f

Truth Table Final Column (Top to Bottom): minterms 2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62

0010001000100010001000100010001000100010001000100010001

K-Map: 00011000

00011000

00011000

00011000

00011000

00011000

00011000

00011000

Input Expression:  $a'b'c'd'ef' + a'b'c'def' + a'b'cd'ef' + a'b'cdef' + a'bcd'ef' + a'bcdef' + a'bc'd'ef' + a'bc'def' + abc'd'ef' + abc'def' + ab'c'd'ef' + ab'c'def' + ab'c d'ef' + ab'cdef' + abc d'ef' + abcdef'$

Minimized Expression: y