$$F = A\underline{BCD} + A\underline{\bar{B}CD} + \bar{A}\underline{BCD} + AB\bar{C}\bar{D} + \bar{A}\underline{\bar{B}CD}$$

$\bar{B}CD$! BCD ליצור

$$F = BCD(A + \bar{A}) + \bar{B}CD(A + \bar{A}) + AB\bar{C}\bar{D}$$

$1 \qquad 1$

$$F = \underline{BCD} + \underline{\bar{B}CD} + AB\bar{C}\bar{D}$$

CD ליצור

$$F = CD(B + \bar{B}) + AB\bar{C}\bar{D}$$

1

$$F = CD + AB\bar{C}\bar{D}$$

$$F = A\bar{B}\bar{C}\bar{D} + A\bar{B}CD + AB\bar{C}\bar{D} + A\bar{B}C\bar{D} + \bar{A}BC\bar{D}$$

ACD ו $A\bar{C}D$ נוכל לצמצם

$$F = A\bar{C}D(B + \bar{B}) + ACD(B + \bar{B}) + \bar{A}BC\bar{D}$$

$B + \bar{B} = 1$

$$F = A\bar{C}D + ACD + \bar{A}BC\bar{D}$$

AD נוכל לצמצם

$$F = AD(C + \bar{C}) + \bar{A}BC\bar{D}$$

$C + \bar{C} = 1$

$$F = AD + \bar{A}BC\bar{D}$$

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

שלושה מחוברים $\bar{A}\bar{C}\bar{D}$

$$F = \bar{A}B\bar{C}\bar{D} + \bar{A}\bar{C}\bar{D}(\bar{B}+B) + A\bar{B}\bar{C}\bar{D} + A\bar{B}\bar{C}D$$

$$\bar{B}+B = 1$$

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

שלושה מחוברים $\bar{A}\bar{D}$

$$F = \bar{A}\bar{D}(\bar{C}+CB) + A\bar{B}\bar{C}\bar{D} + A\bar{B}\bar{C}D$$

לפי חוק:

$A+\bar{A}B = A+B$

ניתן להוכיח כי:

$\bar{A}+AB = \bar{A}+B$

ולפיכך

$\bar{C}+CB = \bar{C}+B$

$$F = \bar{A}\bar{D}(\bar{C}+B) + A\bar{B}C\bar{D} + A\bar{B}\bar{C}D$$

שלושה מחוברים $A\bar{B}$

$$F = \bar{A}\bar{D}(\bar{C}+B) + A\bar{B}(C\bar{D}+\bar{C}D)$$

לפי הגדרת XOR

$$F = \bar{A}\bar{D}(\bar{C}+B) + A\bar{B}(C \oplus D)$$