4

$$f(x,y,z) = \bar{y} + \bar{x}\bar{z} + xz$$

$$x f(1,y,z) + \bar{x} f(0,y,z) = x(\bar{y} + 0\bar{z} + 1z) + \bar{x}(\bar{y} + 1\bar{z} + 0z) =$$

$$= x\bar{y} + xz + \bar{x}\bar{y} + \bar{x}\bar{z} =$$

$$= x\bar{y}z + x\bar{y}\bar{z} + xzy + \cancel{xz\bar{y}} + \bar{x}\bar{y}z + \cancel{\bar{x}\bar{y}\bar{z}} + \bar{x}\bar{z}y + \bar{x}\bar{z}\bar{y} =$$

$$= \bar{x}\bar{y}\bar{z} + \bar{x}\bar{y}z + \bar{x}y\bar{z} + x\bar{y}\bar{z} + x\bar{y}z + xyz =$$

$$= \sum m(0,1,2,4,5,7)$$

5

Pokażemy, że $\varphi = x \land \varphi[x/1] \lor \neg x \land \varphi[x/0]$

Rozpatrzmy przypadki

1° $x = 1$ - założenie

wtedy

$$x \land \varphi[x/1] \lor \neg x \land \varphi[x/0] \equiv 1 \land \varphi[x/1] \lor \overbrace{0 \land \varphi[x/0]}^{\perp} \equiv$$

$$\equiv 1 \land \varphi[x/1] \equiv \varphi[x/1] \equiv \left\{ \begin{matrix} \text{z zał} \\ x=1 \end{matrix} \right\} \equiv \varphi$$

2° $x=0$ - założenie

$$x \land \varphi[x/1] \lor \neg x \land \varphi[x/0] \equiv 0 \land \varphi[x/1] \lor 1 \land \varphi[x/0] \equiv$$

$$\equiv 1 \land \varphi[x/0] \equiv \varphi[x/0] \equiv \left\{ \begin{matrix} \text{z zał.} \\ x=0 \end{matrix} \right\} \equiv \varphi$$

czyli $\varphi = x \land \varphi[x/1] \lor \neg x \land \varphi[x/0]$