(17)

$(88901, 10987) = d$

$d = 88901\,u + 10987\,v$, $u, v \in \mathbb{Z}$

$X_{88901} = (1,0)$ $\quad (u,v) \in \mathbb{Z}^2$

$X_{10987} = (0,1)$

$88901 = 10987 \cdot 8 + 1005$

$X_{1005} = X_{88901} - 8X_{10987}$

$X_{1005} = (1,0) - 8(0,1) = (1, -8)$

$10987 = 1005 \cdot 10 + 937$

$X_{937} = X_{10987} - 10X_{1005}$

$X_{937} = (0,1) - 10(1,-8) = (-10, 81)$

$1005 = 937 \cdot 1 + 68$

$X_{1005} = X_{937} \cdot 1 + X_{68}$

$X_{68} = X_{1005} - X_{937} = (1,-8) - (-10,81) = (11, -89)$

$937 = 68 \cdot 13 + 53$

$X_{53} = X_{937} - 13X_{68}$

$X_{53} = (-10,81) - 13(11,-89) = (-10 - 143, 81 + 1157)$

$= (-153, 1238)$

$68 = 53 \cdot 1 + 15$

$X_{15} = X_{68} - X_{53} = (11,-89) - (-153, 1238)$

$= (11 + 153, -89 - 1238)$

$= (164, -1327)$

$53 = 15 \cdot 3 + 8$

$53 - 45 = 8$

$x_8 = x_{53} - 3x_{15}$

$x_8 = (-153, 1238) - 3(164, -1327)$

$= (-153 - 492, 1238 + 3981)$

$= (-645, 5219)$

$15 = 8 \cdot 1 + 7$

$x_{15} = x_8 + x_7$

$x_7 = x_{15} - x_8 = (164, -1327) - (-645, 5219)$

$= (164 + 645, -1327 - 5219)$

$= (809, -6546)$

$8 = 7 \cdot 1 + 1$

$x_1 = x_8 - x_7 = (-645, 5219) - (809, -6546)$

$= (-645 - 809, 5219 + 6546)$

$= (\underbrace{-1454}_{u}, \underbrace{11765}_{v})$

$7 : 7 = 7$

$7 = (1)\,7 + 0$

↳ CMMDC

$d = ua + vb$

$1 = -1454 \cdot 88901 + 11765 \cdot 10987$

$1 = \underbrace{-1454}_{u} \cdot 88901 + \underbrace{11765}_{v} \cdot 10987$

Coeficienții Bezout sunt: u; v

(17)

$a = 36$

$m = 67$

$x_{36} = (0,1)$

$x_{67} = (1,0)$

$67 = 36 \cdot 1 + 31$

$x_{31} = x_{67} - x_{36} = (1,0) - (0,1) = (1,-1)$

$36 = 31 \cdot 1 + 5$

$x_{36} = x_{31} \cdot 1 + x_5$

$x_5 = x_{36} - x_{31} = (0,1) - (1,-1) = (-1,2)$

$31 = 5 \cdot 6 + 1$

$x_{31} = x_5 \cdot 6 + x_1$

$x_A = x_{31} - 6x_5 = (1,-1) - 6\,(-1,2) = (1+6, -1-12) = (7,-13)$

$5 = (1) \cdot 5 + 0$

↳ c.mmdc

$1 = 67u + 36v = 67 \cdot 7 + 36 \cdot (-13) = 469 + (-468) = 1$

$u = 7$

$v = -13$

$1 = \underbrace{67 \cdot 7}_{\equiv 0} + 36 \cdot (-13) \pmod{67}$

$1 \equiv 36 \cdot (-13) \pmod{67} \Rightarrow 36^{-1} = -13$

$36^{-1} = 67 - 13 = 54$ în $\mathbb{Z}_{67}$.