

$$p = 727777887889889$$

$$x = 11016201420137$$

$$k = 173422142539$$

$$a = 310701$$

$$p-1 = 727777887889888 = 2^5 * 11 * 293 * 7056487433$$

$$\alpha = 2$$

$$\beta = \alpha^a \bmod p = 2^{310701} \bmod 727777887889889$$

$$= 242049547420770$$

$$Z_k = (\alpha^k, x \cdot \beta^k) \bmod p$$

$$= (\alpha^k \bmod p, (x \bmod p \cdot \beta^k \bmod p) \bmod p)$$

$$= (711295250732203, 267367881434934)$$

$$d_k(y) = y_2 \cdot y_1^{p-a-1} \bmod p$$

$$= (y_2 \bmod p \cdot y_1^{p-a-1} \bmod p) \bmod p$$

$$= (267367881434934 * 406130205920178) \bmod p$$

$$= 11016201420137 = x$$