

Príklad

1. RSA $n = 143$, $p = 11$, $q = 13$, $e = 7$. Vypočítat d , napsat VK, PK a zašifrovať číslo 9.

$$p = 11$$

$$q = 13$$

$$n = pq = 143$$

$$e = 7$$

$$\Phi(n) = (p-1)(q-1)$$

$$\Phi(143) = 10 \cdot 12 = 120$$

$$e \cdot d \bmod \Phi(n) = 1$$

$$7d \bmod 120 = 1$$

$$d = 103$$

$$VK = (n, e) = (143, 7)$$

$$SK = (n, d) = (143, 103)$$

$$m = 9$$

$$120x + 7y = 1$$

$$\gcd(120, 7)$$

$$P_1: 120 = 17(7) + 1$$

$$P_2: 1 = 120 - 17(7)$$

$$-17(7) = 1$$

$$-17 + 120 = 103$$

$$C = m^e \bmod n = 9^7 \bmod 143 = 4\,782\,969 \bmod 143 = \underline{48}$$

$$m = C^d \bmod n = 48^{103} \bmod 143 = \underline{9}$$