

B46.

a) $1532^5 - 1 : 9 ?$

Ta có $1532 \equiv 2 \pmod{9}$

$$\Rightarrow 1532^5 \equiv 2^5 \pmod{9}$$

$$\Rightarrow 1532^5 \equiv 5 \pmod{9}$$

$$\Rightarrow 1532^5 - 1 \equiv 4 \pmod{9}$$

b) 10! chia cho 11.

Ta có $10! \equiv -1 \pmod{11}$ Định lý Wilson

$$9 \equiv -2$$

$$8 \equiv -3$$

$$(p-1)! \equiv -1 \pmod{p}$$

$$10! \equiv -1 \pmod{11}$$

$$\Leftrightarrow 10! \equiv 10 \pmod{11}$$

B49.

$$2222^{5555} + 5555^{2222} \equiv ? \pmod{7}$$

Ta có $2222 \equiv 3 \pmod{7}$

$$2222^{5555} \equiv 3^{5555} \pmod{7}$$

$$(3^3)^{1851} \equiv (-1)^{1851} \pmod{7}$$

$$3^2 \cdot 3^{5553} \equiv -9 \pmod{7}$$

$$\Rightarrow 2222^{5555} \equiv 5 \pmod{7}$$

$$\text{Ví dụ } 5555 \equiv 4 \pmod{7}$$

$$5555^{2222} \equiv 4^{2222} \pmod{7}$$

$$4^3 \equiv 1 \pmod{7}$$

$$4^2 (4^3)^{740} \equiv 4^2 \cdot 1^{740} \pmod{7}$$

$$4^{2222} \equiv 16 \pmod{7}$$

$$\Rightarrow 4^{2222} \equiv 2 \pmod{7}$$

$$\text{Vậy } 2^{46225555} + 5555^{2222} : 7.$$

BT 53

$$3^{100} \equiv ? \pmod{13}$$

$$3^5 \equiv 1 \pmod{13}$$

$$3 (3^3)^{33} \equiv 3 \cdot 1^{33} \pmod{13}$$

$$3 \cdot 3^{99} \equiv 3 \cdot 1 \pmod{13}$$

$$3^{1000} \equiv 3 \pmod{13}$$