Homework:

November 20th 2024
deadline 27 November 2024

(i) Find criteria for divisibility by 5 and 4 in terms of digits in position system with base 10.

(ii) Show that $ac \equiv bc(mod\, n)$ and $c \perp n$ implies that $a \equiv b(mod\, n)$.

Does it hold without assuming $c \perp n$?

(iii) For which integer $0 \leq p \leq 15$ there is an integer x with

$$xp \equiv 1(mod\, 16)?$$

Find all such x for $p = 11$.

(iv) Let p be a prime number. Find remainder of the following numbers

$$2^{p-1}, \quad 2^{p+2}$$

when dividing by p.