

3. Prove part (8) of Theorem 2.7:

For any classes $[a]$, $[b]$, and $[c]$ in \mathbb{Z}_n , prove $([a] \oplus [b]) \odot [c] = ([a] \odot [c]) \oplus ([b] \odot [c])$.

4. Answer the following questions:

a. If $r \equiv 4 \pmod{10}$ and $s \equiv -3 \pmod{10}$, then what is $2r + 3s$ congruent to modulo 10?

b. Show that $a^{p-1} \equiv 1 \pmod{p}$ for $p = 5$ and $a = 2$

5. Find all of the solutions of each congruence:

a. $3x \equiv 1 \pmod{7}$

b. $6x \equiv 9 \pmod{15}$