Proposition 4.30. *Show that if* $a \equiv b \mod n$ *and* $c \equiv d \mod n$ *then* $ac \equiv bd \mod n$.

Theorem 4.31. *Let* $a, b \in \mathbb{Z}$. *Then* $a \equiv b \mod 3$ *if and only if* $2a + b \equiv 0 \mod 3$.

Theorem 4.32. *Let* p *be a prime and* $c \in \mathbb{Z}$. *If* c *is not divisible by* p *then* $c^p \equiv c \mod p$.

Problem 4.33. *Determine* $5^{17} \mod 17$.