

Name:	ID:
-------	-----

Exercise 11

11.1 (LPV-6.1.3) Prove that if $a|b$ and $a|c$, then $a|b + c$ and $a|b - c$.

11.2 (LPV-6.10.3) Prove that if $c \neq 0$ and $ac|bc$ then $a|b$.

11.3 (LPV-6.10.7) Prove that if $a > 3$, then a , $a + 2$, and $a + 4$ cannot be all prime.

11.4 (LPV-6.3.3) Suppose that a and b are integers and $a|b$. Suppose that p is prime and $p|b$, but $p \nmid a$. Prove that $p|(b/a)$.

Name:	ID:
-------	-----

11.5 Solve for integer x in equation $10x + 3 \equiv 0 \pmod{71143}$.

11.6 In this problem, we will perform all calculation modulo 11. Let x and y denote the last 2 digits of your student id. (E.g., if you ID is 1234567890, then $x = 9$, $y = 0$.) Find the values a, b_i that satisfy these equations.

$$10a + 5b \equiv x \pmod{11}$$

$$7a + 2b \equiv y \pmod{11}$$