

First Assignment

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Task 1

rem	val	expr
r_0	2022	a
r_1	752	b
$r_2 = r_0 \bmod r_1$	518	$a - 2b$
$r_3 = r_1 \bmod r_2$	234	$b - (a - 2b) = 3b - a$
$r_4 = r_2 \bmod r_3$	50	$(a - 2b) - 2(3b - a) = 3a - 8b$
$r_5 = r_3 \bmod r_4$	34	$(3b - a) - 4(3a - 8b) = 35b - 13a$
$r_6 = r_4 \bmod r_5$	16	$(3a - 8b) - (35b - 13a) = 16a - 43b$
$r_7 = r_5 \bmod r_6$	2	$(35b - 13a) - 2(16a - 43b) = 121b - 45a$
$r_8 = r_6 \bmod r_7$	0	

Task 2

1) $x + 17 = 23 \pmod{37} \mid -17$
 $x + 17 - 17 = 23 - 17 \pmod{37}$
 $x = 6 \pmod{37}$
 $x = 6$

2) $x + 42 = 19 \pmod{51} \mid -42$
 $x + 42 - 42 = 19 - 42 \pmod{51}$
 $x = -23 \pmod{51}$
 $x = -23 + 51 \pmod{51}$
 $x = 28 \pmod{51}$
 $x = 28$

Task 3

$$23^{37} \bmod 40 =$$

Task 4

Task 5

Task 6