Problem 2

$a =$ 1011 (11)

$x =$ 1110 (14)

$-32\ 16\ 8\ 4\ 2\ 1$

$2a =$ 010110 (22)

$-2a =$ 101010 (-22)

$x = (1110)_2 =$

$= (1\,00\,{-1}0)_2 =$

$= (1\ 0\ -2)_4 = z$

$y =$ 1100 (12)

ps(0)	0	0	1	1	0	0	
pc(0)	0	0	0	0	0	0	
$z_0 \cdot a$	1	0	1	0	1	0	
4ps(1)		1	0	0	1	1	0
4pc(1)	0	0	1	0	0	0	0
ps(1)	1	1	1	0	0	1	10
pc(1)	0	0	0	1	0	0	
$z_1 \cdot a$	0	0	0	0	0	0	
4ps(2)		1	1	1	1	0	1	10
4pc(2)	0	0	0	0	0	0	0
ps(2)	1	1	1	1	1	1	0110
pc(2)	0	0	0	0	0	0	
$z_2 \cdot a$	0	0	1	0	1	1	
ps(3)		1	1	0	1	0	0	0110
pc(3)	0	0	1	0	1	1	0

carry(1) = 0 ← carry(0) = 0

carry(2) = 0 ← carry(1) = 0

$10 + 00 = 010$

$01 + 00 = 001$

carry(3) = 0 ← carry(2) = 0

0010100110

$128\ 64\ 32\ 16\ 8\ 4\ 2\ 1$

$p = a \cdot x + y = 1010\ 0110 = 128 + 32 + 4 + 2 = 166$

$p = 11 \cdot 14 + 12 = 166$