

Karnaugh map for function  $f_1$  with variables  $x_1, x_2, x_3, x_4$ . The map shows 1s at the following  $(x_1, x_2)$  pairs:  $(11, 00)$ ,  $(11, 01)$ ,  $(00, 11)$ , and  $(01, 11)$ . Two groups are circled: a pink group for  $x_1 = 1$  and a black group for  $x_2 = 1$ .

	$x_1 x_2$	00	01	11	10
$x_3 x_4$	00			1	1
	01		1	1	1
	11	1	1		
	10	1	1		

(a) Function  $f_1$