H_1

Homework I

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1 Details of Homework 1

Q. 1 Prove the following

$$(xy)' = x' + y' \tag{1}$$

x	y	xy	$(xy)'$	x'	y'	$x' + y'$
0	0	0	1	1	1	1
0	1	0	1	1	1	0
1	0	0	1	1	0	1
1	1	1	0	0	0	0

Q. 2 Prove the following

$$(x + y)' = x'y' \tag{2}$$

x	y	$x + y$	$(x + y)'$	x'	y'	$x'y'$
1	0	1	0	0	1	0
1	1	1	0	0	0	0
0	0	0	1	1	1	1
0	1	1	0	1	0	0

Q. 3 Prove the following

$$a + bc = (a + b)(a + c) \tag{3}$$

a	b	c	bc	$a+bc$	$a+b$	$a+c$	$(a+b)(a+c)$
0	0	0	0	0	0	0	0
0	0	1	0	0	0	1	0
0	1	0	0	0	1	0	0
0	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1
1	0	1	0	1	1	1	1
1	1	0	0	1	1	1	1
1	1	1	1	1	1	1	1