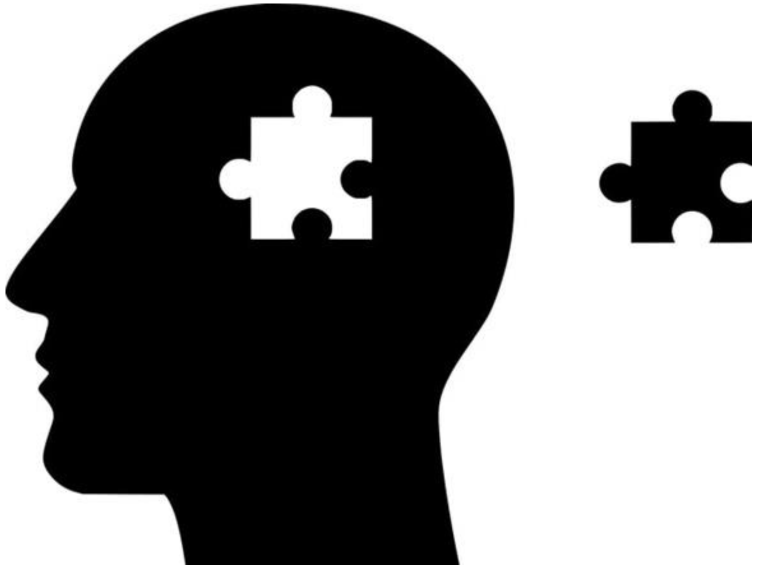

Propriedades Identidades Demonstração

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Propriedades/identidades

$x.y = y.x$ Comutativa

$x+y = y+x$

$x.(y.z) = (x.y).z$ Associativa

$x+(y+z) = (x+y)+z$

$x.(y+z) = x.y+x.z$ Distributiva

$x+y.z = (x+y).(x+z)$

$x+x.y = x$ Absorção

$x.(x+y) = x$

$x.y+x.\overline{y} = x$ Combinação

$(x+y).(x+\overline{y}) = x$

$\overline{x.y} = \overline{x}+\overline{y}$ → Teorema de DeMorgan

$\overline{x+y} = \overline{x}.\overline{y}$

$x+\overline{x}.y = x+y$ Consenso

$x.(\overline{x}+y) = x.y$

Comutativa => $x \cdot y = y \cdot x$

x	y	x . y
0	0	0
0	1	0
1	0	0
1	1	1

y	x	y . x
0	0	0
0	1	0
1	0	0
1	1	1

Comutativa => $x + y = y + x$

x	y	x + y
0	0	0
0	1	1
1	0	1
1	1	1

y	x	y + x
0	0	0
0	1	1
1	0	1
1	1	1

Associativa => $x \cdot (y \cdot z) = (x \cdot y) \cdot z$

x	y	z	x . (y . z)
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

x	y	z	(x . y) . z
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

Associativa => $x + (y + z) = (x + y) + z$

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

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

Distributiva => $x \cdot (y + z) = x \cdot y + x \cdot z$

x	y	z	$x \cdot (y + z)$
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

x	y	z	$x \cdot y + x \cdot z$
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

Distributiva => $x + (y . z) = (x + y) . (x + z)$

x	y	z	x + (y . z)
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

x	y	z	(x + y) . (x + z)
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

Absorção => $x + (x \cdot y) = x$

x	y	x + (x . y)
0	0	0
0	1	0
1	0	1
1	1	1

Absorção => $x \cdot (x + y) = x$

x	y	x . (x + y)
0	0	0
0	1	0
1	0	1
1	1	1

Combinação => $x \cdot y + x \cdot \sim y = x$

x	y	x . y	~y	x . ~y	x . y + x . ~y
0	0	0	1	0	0
0	1	0	0	0	0
1	0	0	1	1	1
1	1	1	0	0	1

Combinação => $(x + y) . (x + \sim y) = x$

x	y	(x + y)	~y	(x + ~y)	(x + y) . (x + ~y)
0	0	0	1	1	0
0	1	1	0	0	0
1	0	1	1	1	1
1	1	1	0	1	1

Teorema de DeMorgan => ~(x . y) = (~x + ~y)

x	y	~x	~y	x.y	~(x.y)	~x + ~y	~(x.y) = ~x + ~y
0	0	1	1	0	1	1	1 = 1
0	1	1	0	0	1	1	1 = 1
1	0	0	1	0	1	1	1 = 1
1	1	0	0	1	0	0	0 = 0

Teorema de DeMorgan => ~(x + y) = ~x . ~y

x	y	~(x + y) = ~x . ~y
0	0	1 = 1
0	1	0 = 0
1	0	0 = 0
1	1	0 = 0

Conscenso => $x + (\sim x) . y = x + y$

x	y	~x	(~x) . y	x + (~x) . y	x + y
0	0	1	0	0	0
0	1	1	1	1	1
1	0	0	0	1	1
1	1	0	0	1	1

Conscenso => $x \cdot (\sim x + y) = x \cdot y$

x	y	x . (~x + y)	x . y
0	0	0	0
0	1	0	0
1	0	0	0
1	1	1	1