POSTULATES & THEOREMS

$x+0=x$	$x\cdot 1=x$	identity
$x+y=y+x$	$x\cdot y=y\cdot x$	commutative
$x\cdot(y+z)=x\cdot y+x\cdot z$	$x+(y\cdot z)=(x+y)(x+z)$	distributive
$x+!x=1$	$x\cdot !x=0$	
$x+x=x$	$x\cdot x=x$	
$x+1=1$	$x\cdot 0=0$	
$(x')'=x$	$(x')'=x$	involution
$x+(y+z)=(x+y)+z$	$x\cdot(y\cdot z)=(x\cdot y)\cdot z$	associative
$(x+y)'=x'\cdot y'$	$(x\cdot y)'=x'+y'$	DeMorgan
$x+x\cdot y=x$	$x\cdot(x+y)=x$	absorption

- duality if we exchange + with · and 1 with 0.

<u>ex.</u> prove $x\cdot x=x$

$$\begin{aligned} x &= x\cdot 1 \\ &= x\cdot(x+!x) \\ &= x\cdot x+x\cdot !x \\ &= x\cdot x+0 \\ &= x\cdot x \end{aligned}$$

SIMPLIFICATION

<u>ex.</u> find simpler expression for $f=ab+cd+a+!(!(cd)+a)$

$= ab+cd+a+cd(!a)$ deMorgan

$= a(1+b)+cd(1+!a)$ factoring/distributive

$= a+cd$