Demonstration of Tests of Conversion of PM Dot Notation to Parentheses

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SECTION 0. VERIFICATION TESTS (of dot to paren dot icn)
For each proposition is given:
1: the PM notation with dots.
2: the notation with parentheses
3: the Polish (with Lukasiewicz symbols) notation

$\ast 2{\cdot}06 \vdash :.\, p \supset q \,.\, \supset :\, q \supset r \,.\, \supset \,.\, p \supset r$
Version with parentheses
$\ast 2{\cdot}06 \vdash (p \supset q) \supset ((q \supset r) \supset (p \supset r))$
Polish Lukasiewicz notation
$\ast 2{\cdot}06 \vdash CCpqCCqrCpr$
$\ast 3{\cdot}47 \vdash :.\, p \supset r \,.\, q \supset s \,.\, \supset :\, p \,.\, q \,.\, \supset \,.\, r \,.\, s$
Version with parentheses
$\ast 3{\cdot}47 \vdash (p \supset r) \wedge (q \supset s) \supset ((p) \wedge (q) \supset (r) \wedge (s))$
Polish Lukasiewicz notation
$\ast 3{\cdot}47 \vdash CKCprCqsKCKpqrs$
$\ast 4{\cdot}22 \vdash :\, p \equiv q \,.\, q \equiv r \,.\, \supset \,.\, p \equiv r$
Version with parentheses
$\ast 4{\cdot}22 \vdash (p \equiv q) \wedge (q \equiv r) \supset (p \equiv r)$
Polish Lukasiewicz notation
$\ast 4{\cdot}22 \vdash CKEpqEqrEpr$
$\ast 4{\cdot}41 \vdash :.\, p \,.\, \vee \,.\, q \,.\, r :\, \equiv \,.\, p \vee q \,.\, p \vee r$
Version with parentheses
$\ast 4{\cdot}41 \vdash ((p) \vee (q) \wedge (r)) \equiv (p \vee q) \wedge (p \vee r)$
Polish Lukasiewicz notation
$\ast 4{\cdot}41 \vdash KEKApqrApqApr$
$\ast 4{\cdot}43 \vdash :.\, p \,.\, \equiv :\, p \vee q \,.\, p \vee \sim q$
Version with parentheses
$\ast 4{\cdot}43 \vdash (p) \equiv ((p \vee q) \wedge (p \vee \sim q))$
Polish Lukasiewicz notation
$\ast 4{\cdot}43 \vdash EpKApqApNq$

$*4{\cdot}44 \vdash :. p . \equiv : p . \vee . p . q$
Version with parentheses
$*4{\cdot}44 \vdash (p) \equiv ((p) \vee (p) \wedge (q))$
Polish Lukasiewicz notation
$*4{\cdot}44 \vdash EpKAppq$
$*4{\cdot}87 \vdash :. p . q . \supset . r : \equiv : p . \supset . q \supset r : \equiv : q . \supset . p \supset r : \equiv : q . p . \supset . r$
Version with parentheses
$*4{\cdot}87 \vdash ((p) \wedge (q) \supset (r)) \equiv ((p) \supset (q \supset r)) \equiv ((q) \supset (p \supset r)) \equiv ((q) \wedge (p) \supset (r))$
Polish Lukasiewicz notation
$*4{\cdot}87 \vdash EEECKpqrCpCqrCqCprCKqpr$
$*4{\cdot}88 \vdash :. p . q . \supset . r . \equiv : p . \supset . q \supset r : \equiv : q . \supset . p \supset r : \equiv : q . p . \supset . r$
Version with parentheses
$*4{\cdot}88 \vdash (p) \wedge (q) \supset (r) \equiv ((p) \supset (q \supset r)) \equiv ((q) \supset (p \supset r)) \equiv ((q) \wedge (p) \supset (r))$
Polish Lukasiewicz notation
$*4{\cdot}88 \vdash EEECKpqrCpCqrCqCprCKqpr$
$*5{\cdot}33 \vdash :. p . q \supset r . \equiv : p : p . q . \supset . r$
Version with parentheses
$*5{\cdot}33 \vdash (p) \wedge (q \supset r) \equiv (p) \wedge ((p) \wedge (q) \supset (r))$
Polish Lukasiewicz notation
$*5{\cdot}33 \vdash KEKpCqrpCKpqr$
From Landon D. C. Elkind's Paper in Russell: Vol. 43, no. 1, page 44
$*431{\cdot}441 \vdash . p \vee q . \equiv . r \supset s$
Version with parentheses
$*431{\cdot}441 \vdash (p \vee q) \equiv (r \supset s)$
Polish Lukasiewicz notation
$*431{\cdot}441 \vdash EApqCrs$
$*431{\cdot}442 \vdash : p . \vee . q \equiv r : \supset : s$
Version with parentheses
$*431{\cdot}442 \vdash ((p) \vee (q \equiv r)) \supset ((s))$
Polish Lukasiewicz notation
$*431{\cdot}442 \vdash CApEqrs$
$*431{\cdot}443 \vdash : p \vee q . \equiv . r : \supset : s$
Version with parentheses
$*431{\cdot}443 \vdash ((p \vee q) \equiv (r)) \supset ((s))$
Polish Lukasiewicz notation
$*431{\cdot}443 \vdash CEApqrs$
$*431{\cdot}444 \vdash : p : \vee : q \equiv r . \supset . s$
Version with parentheses
$*431{\cdot}444 \vdash (p) \vee ((q \equiv r) \supset (s))$
Polish Lukasiewicz notation
$*431{\cdot}444 \vdash ApCEqrs$
$*431{\cdot}445 \vdash : p : \vee : q . \equiv . r \supset s$
Version with parentheses
$*431{\cdot}445 \vdash (p) \vee ((q) \equiv (r \supset s))$

Polish Lukasiewicz notation
$*431 \cdot 445 \vdash ApEqCrs$
From same, page 54
$*431 \cdot 54 \vdash : p . q : r . s : \supset : p . s : r . q$
Version with parentheses
$*431 \cdot 54 \vdash ((p) \wedge (q)) \wedge ((r) \wedge (s)) \supset ((p) \wedge (s)) \wedge ((r) \wedge (q))$
Polish Lukasiewicz notation
$*431 \cdot 54 \vdash KCKKpqKrsKpsKrq$
check longer prop name
Version with parentheses
Polish Lukasiewicz notation
Propositions involving quantifiers
$*9 \cdot 2 \vdash : (x) . \psi x . \supset . \psi y$
Version with parentheses
$*9 \cdot 2 \vdash (((x))\psi x) \supset (\psi y)$
Polish Lukasiewicz notation
$*9 \cdot 2 \vdash C(x)\psi x\psi y$
$*9 \cdot 21 \vdash :. (x) . \psi x \supset \phi x . \supset : (x) . \psi x . \supset . (x) . \phi x$
Version with parentheses
$*9 \cdot 21 \vdash (((x))\psi x \supset \phi x) \supset (((x))\psi x) \supset ((x))\phi x$
Polish Lukasiewicz notation
$*9 \cdot 21 \vdash CCC(x)\psi x\phi x(x)\psi x(x)\phi x$
$*9 \cdot 22 \vdash :. (x) . \psi x \supset \phi x . \supset : (\exists x) . \psi x . \supset . (\exists x) . \phi x$
Version with parentheses
$*9 \cdot 22 \vdash (((x))\psi x \supset \phi x) \supset (((\exists x))\psi x) \supset ((\exists x))\phi x$
Polish Lukasiewicz notation
$*9 \cdot 22 \vdash CCC(x)\psi x\phi x(\exists x)\psi x(\exists x)\phi x$
$*9 \cdot 31 \vdash :. (\exists x) . \phi x . \vee . (\exists x) . \phi x : \supset . (\exists x) . \phi x$
Version with parentheses
$*9 \cdot 31 \vdash (((((\exists x))\phi x) \vee ((\exists x))\phi x)) \supset ((\exists x))\phi x$
Polish Lukasiewicz notation
$*9 \cdot 31 \vdash CA(\exists x)\phi x(\exists x)\phi x(\exists x)\phi x$
$*9 \cdot 401 \vdash :: p : \vee : q . \vee . (\exists x) . \psi x :. \supset :. q : \vee : p . \vee . (\exists x) . \psi x$
Version with parentheses
$*9 \cdot 401 \vdash (((p) \vee ((q) \vee ((\exists x))\psi x))) \supset ((q) \vee ((p) \vee ((\exists x))\psi x))$
Polish Lukasiewicz notation
$*9 \cdot 401 \vdash CApAq(\exists x)\psi xAqAp(\exists x)\psi x$
$*10 \cdot 35 \vdash :. (\exists x) . p . \psi x . \equiv : p : (\exists x) . \psi x$
Version with parentheses
$*10 \cdot 35 \vdash (((\exists x))p) \wedge (\psi x) \equiv (p) \wedge (((\exists x))\psi x)$
Polish Lukasiewicz notation
$*10 \cdot 35 \vdash KEK(\exists x)p\psi xp(\exists x)\psi x$
$*11 \cdot 2 \vdash : (x, y) . \phi[x, y] . \equiv . (y, x) . \phi[x, y]$
Version with parentheses

$*11{\cdot}2 \vdash ((x,y) \,.\, \phi[x,y]) \equiv ((y,x) \,.\, \phi[x,y])$
Polish Lukasiewicz notation
$*11{\cdot}2 \vdash E(x,y) \,.\, \phi[x,y](y,x) \,.\, \phi[x,y]$
One Step in proof of 11.55 I wanted example of 2 adjacent quantifiers - hard to find.
$*11{\cdot}551 \vdash :.\, (x) :.\, (\exists y) \,.\, \psi x \,.\, \phi[x,y] \,.\, \equiv : \psi x : (\exists y) \,.\, \phi[x,y]$
Version with parentheses
$*11{\cdot}551 \vdash ((((x))(\exists y))\psi x) \wedge (\phi[x,y]) \equiv (\psi x) \wedge (((\exists y))\phi[x,y])$
Polish Lukasiewicz notation
$*11{\cdot}551 \vdash KEK(x)(\exists y)\psi x\phi[x,y]\psi x(\exists y)\phi[x,y]$
From same, page 46
$*431{\cdot}46 \vdash : (x) \,.\, \psi x \,.\, \phi x \,.\, \supset \,.\, (x) \,.\, \psi x$
Version with parentheses
$*431{\cdot}46 \vdash (((x))\psi x) \wedge (\phi x) \supset ((x))\psi x$
Polish Lukasiewicz notation
$*431{\cdot}46 \vdash CK(x)\psi x\phi x(x)\psi x$
Other Tests
$*99{\cdot}99 \vdash :.\, \sim(\exists x) : \sim\psi x \,.\, \supset \,.\, (x) \,.\, \sim\psi x$
Version with parentheses
$*99{\cdot}99 \vdash ((\sim(\exists x))\sim\psi x) \supset ((x))\sim\psi x$
Polish Lukasiewicz notation
$*99{\cdot}99 \vdash CN(\exists x)N\psi x(x)N\psi x$