Inference at $*$ 2 1 0
of proof for Lemma absval_elim:

1. $P : \mathbb{Z} \to \mathbb{P}$
2. $\forall x{:}\mathbb{N}.\ P(x)$
3. $x : \mathbb{Z}$

$\vdash P(\text{if } 0 \leq\text{z } x \text{ then } x \text{ else -}x \text{ fi })$
by PERMUTE{1:n,
2:n,
3:n,
4:n,
5:n,
6:n,
7:n,
8:n,
9:n,
10:n,
11:n,
12:n,
10:n,
13:n,
11:n,
14:n,
15:n,
16:n,
17:n,
18:n,
16:n,
15:n,
19:n}

1: . . . . .wf. . . . . NILNIL

$\vdash 0 \leq\text{z } x \in \mathbb{B}$
2: . . . . .wf. . . . . NILNIL

$\vdash \mathbb{B} \in$ Type
3: . . . . .wf. . . . . NILNIL

4. $0 \leq\text{z } x =$ tt
$\vdash (0 \leq\text{z } x =$ tt$) \in \mathbb{P}_1$
4: . . . . .wf. . . . . NILNIL

4. $0 \leq\text{z } x =$ tt

$\vdash (\uparrow 0 \leq_{\mathrm{z}} x) \in \mathbb{P}_1$
5: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{tt}$
$\vdash (0 \leq x) \in \mathbb{P}_1$
6: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{tt}$
$\vdash 0 \leq_{\mathrm{z}} x \in \mathbb{B}$
7: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{tt}$
$\vdash 0 \in \mathbb{Z}$
8: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{tt}$
$\vdash x \in \mathbb{Z}$
9:

4. $0 \leq x$
$\vdash P(\mathrm{if\ tt\ then}\ x\ \mathrm{else}\ \text{-}x\ \mathrm{fi}\ )$
10: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{ff}$
$\vdash (0 \leq_{\mathrm{z}} x = \mathrm{ff}) \in \mathbb{P}_1$
11: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{ff}$
$\vdash (\uparrow x <_{\mathrm{z}} 0) \in \mathbb{P}_1$
12: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{ff}$
$\vdash (x < 0) \in \mathbb{P}_1$
13: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{ff}$
$\vdash (\uparrow(\neg_b 0 \leq_{\mathrm{z}} x)) \in \mathbb{P}_1$
14: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{ff}$
$\vdash 0 \leq_{\mathrm{z}} x \in \mathbb{B}$
15: . . . . .wf. . . . . NILNIL

4. $0 \leq_{\mathrm{z}} x = \mathrm{ff}$
$\vdash 0 \in \mathbb{Z}$
16: . . . . .wf. . . . . NILNIL

4. $0 \leq_z x = \mathrm{ff}$
$\vdash x \in \mathbb{Z}$
17: .....antecedent..... NILNIL

4. $0 \leq_z x = \mathrm{ff}$
$\vdash$ True
18: .....wf..... NILNIL

4. $0 \leq_z x = \mathrm{ff}$
5. $(\uparrow(\neg_b 0 \leq_z x)) = (\uparrow x <_z 0)$
$\vdash \mathbb{P}_1 = \mathbb{P}_1$
19:

4. $x < 0$
$\vdash P(\text{if ff then } x \text{ else -}x \text{ fi })$
.

http://www.nuprl.org/FDLcontent/p0_942988_/p121_73055_{absval_elim}2_1_0.html