

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

1. $P : \mathbb{Z} \rightarrow \mathbb{P}$
 2. $\forall x:\mathbb{N}. P(x)$
 3. $x : \mathbb{Z}$
- $\vdash P(\text{if } 0 \leq_z x \text{ then } x \text{ else } -x \text{ fi})$

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

$\vdash 0 \leq_z x \in \mathbb{B}$

2:wf..... NILNIL

$\vdash \mathbb{B} \in \text{Type}$

3:wf..... NILNIL

4. $0 \leq_z x = \text{tt}$

$\vdash (0 \leq_z x = \text{tt}) \in \mathbb{P}_1$

4:wf..... NILNIL

4. $0 \leq_z x = \text{tt}$

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

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

4. $0 \leq_Z x = \text{tt}$
 $\vdash 0 \leq_Z x \in \mathbb{B}$
7:wf..... NILNIL

4. $0 \leq_Z x = \text{tt}$
 $\vdash 0 \in \mathbb{Z}$
8:wf..... NILNIL

4. $0 \leq_Z x = \text{tt}$
 $\vdash x \in \mathbb{Z}$
9:

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

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

4. $0 \leq_Z x = \text{ff}$
 $\vdash (\uparrow x <_Z 0) \in \mathbb{P}_1$
12:wf..... NILNIL

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

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

4. $0 \leq_Z x = \text{ff}$
 $\vdash 0 \leq_Z x \in \mathbb{B}$
15:wf..... NILNIL

4. $0 \leq_Z x = \text{ff}$
 $\vdash 0 \in \mathbb{Z}$
16:wf..... NILNIL

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

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

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

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