| V | 上 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|----------|----------|----------|----------|----------|----------|----------|----------|---|
| | | | | | | | | |
| < 0 | < 0 | < 0 | | | | | | |
| =0 | =0 | ≤ 0 | =0 | | | | | |
| > 0 | > 0 | ≥ 0 | ≥ 0 | > 0 | | | | |
| ≤ 0 | ≤ 0 | ≤ 0 | ≤ 0 | Т | ≤ 0 | | | |
| $\neq 0$ | $\neq 0$ | $\neq 0$ | Т | $\neq 0$ | Т | $\neq 0$ | | |
| ≥ 0 | ≥ 0 | Т | ≥ 0 | ≥ 0 | Т | Т | ≥ 0 | |
| T | Т | Т | Т | Т | Т | Т | Т | Т |

| + | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|----------|---------|-----|----------|-----|----------|----------|----------|----------|
| | T | | | | | | | |
| < 0 | 1 | < 0 | | | | | | |
| =0 | \perp | < 0 | =0 | | | | | |
| > 0 | 1 | T | > 0 | > 0 | | | | |
| ≤ 0 | 1 | < 0 | ≤ 0 | Т | ≤ 0 | | | |
| $\neq 0$ | 1 | Т | $\neq 0$ | Т | Т | Т | | |
| ≥ 0 | 1 | Т | ≥ 0 | > 0 | Т | Т | ≥ 0 | |
| T | 1 | Т | Т | T | Т | Т | T | \vdash |

| _ | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Τ |
|----------|---|---------|----------|-----|----------|----------|----------|----------|
| <u></u> | 1 | \perp | 1 | 1 | | 1 | 1 | <u> </u> |
| < 0 | 1 | Т | > 0 | > 0 | Т | Т | > 0 | T |
| =0 | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | T |
| > 0 | 1 | < 0 | < 0 | T | < 0 | Т | T | T |
| ≤ 0 | 1 | Т | ≥ 0 | > 0 | Т | Т | ≥ 0 | T |
| $\neq 0$ | 1 | Т | $\neq 0$ | Τ | Т | Т | Т | T |
| ≥ 0 | 1 | < 0 | ≤ 0 | Τ | ≤ 0 | Т | Т | T |
| T | 1 | Т | Τ | Τ | Т | Т | Т | T |

| * | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|----------|---------|----------|----|----------|----------|----------|----------|---|
| <u></u> | 1 | | | | | | | |
| < 0 | 1 | > 0 | | | | | | |
| =0 | 1 | =0 | =0 | | | | | |
| > 0 | 1 | < 0 | =0 | > 0 | | | | |
| ≤ 0 | \perp | ≥ 0 | =0 | ≤ 0 | ≥ 0 | | | |
| $\neq 0$ | 1 | $\neq 0$ | =0 | $\neq 0$ | Т | $\neq 0$ | | |
| ≥ 0 | 1 | ≤ 0 | =0 | ≥ 0 | ≤ 0 | Т | ≥ 0 | |
| T | 1 | Т | =0 | Т | Т | Т | Т | Т |

| / | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|----------|---|----------|---------|----------|----------|----------|----------|---|
| <u></u> | 1 | \perp | \perp | 1 | | 1 | 1 | 1 |
| < 0 | 1 | > 0 | =0 | < 0 | ≥ 0 | $\neq 0$ | ≤ 0 | Т |
| =0 | 1 | | | 1 | | 1 | 1 | 1 |
| > 0 | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
| ≤ 0 | 1 | > 0 | =0 | < 0 | ≥ 0 | $\neq 0$ | ≤ 0 | Т |
| $\neq 0$ | 1 | $\neq 0$ | =0 | $\neq 0$ | Т | $\neq 0$ | Т | Т |
| ≥ 0 | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
| T | 1 | $\neq 0$ | =0 | $\neq 0$ | Т | $\neq 0$ | Т | Т |

| $e_1 = e_2$ | T | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|-------------|---|-----|----------------|----------|----------|----------|----------|----|
| | 上 | | | | | | | |
| < 0 | 上 | s# | | | | | | |
| =0 | 1 | 1 | s# | | | | | |
| > 0 | 1 | | 1 | s# | | | | |
| ≤ 0 | 1 | s# | s [#] | 1 | s# | | | |
| $\neq 0$ | 1 | s# | Τ | s# | s# | s# | | |
| ≥ 0 | 1 | | s# | s# | s# | s# | s# | |
| Т | 1 | s# | $s^{\#}$ | $s^{\#}$ | s# | s# | $s^{\#}$ | s# |

| x = e | Τ | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|----------|---|----------|----------------|----------|-------------------------|-------------------------|-------------------------|----------------------------|
| 1 | T | 1 | 1 | | | 上 | | |
| < 0 | | s# | 1 | | $s^{\#}[x \mapsto <0]$ | $s^{\#}[x \mapsto <0]$ | | $s^{\#}[x \mapsto < 0]$ |
| =0 | T | 1 | s [#] | 1 | $s^{\#}[x \mapsto = 0]$ | | $s^{\#}[x \mapsto = 0]$ | $s^{\#}[x \mapsto = 0]$ |
| > 0 | T | 1 | Τ | s# | | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ |
| ≤ 0 | Т | $s^{\#}$ | $s^{\#}$ | | s [#] | $s^{\#}[x \mapsto <0]$ | $s^{\#}[x \mapsto = 0]$ | $s^{\#}[x \mapsto \leq 0]$ |
| $\neq 0$ | | s# | 1 | s# | $s^{\#}[x \mapsto <0]$ | s [#] | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto \neq 0]$ |
| ≥ 0 | Т | 上 | s# | s# | $s^{\#}[x \mapsto = 0]$ | $s^{\#}[x \mapsto > 0]$ | s# | $s^{\#}[x \mapsto \geq 0]$ |
| Т | 1 | $s^{\#}$ | $s^{\#}$ | $s^{\#}$ | s [#] | s [#] | s [#] | s [#] |

| $e_1 \neq e_2$ | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|----------------|---|-----|----------------|-----|----------|----------------|----------|----|
| | 1 | | | | | | | |
| < 0 | 1 | s# | | | | | | |
| =0 | 1 | s# | 1 | | | | | |
| > 0 | 1 | s# | s# | s# | | | | |
| ≤ 0 | 上 | s# | s# | s# | s# | | | |
| $\neq 0$ | 1 | s# | s# | s# | s# | s# | | |
| ≥ 0 | 1 | s# | s [#] | s# | s# | s# | $s^{\#}$ | |
| Т | 1 | s# | $s^{\#}$ | s# | s# | s [#] | s# | s# |

| $x \neq e$ | 上 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|------------|---|----------------|----------|----------|------------------------|----------|-------------------------|----------------------------|
| | 1 | 上 | 上 | 1 | | \perp | 上 | |
| < 0 | 1 | s# | s# | s# | s [#] | $s^{\#}$ | s [#] | s [#] |
| =0 | 1 | s# | | s# | $s^{\#}[x \mapsto <0]$ | $s^{\#}$ | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto \neq 0]$ |
| > 0 | 1 | s# | s# | s# | s [#] | $s^{\#}$ | s [#] | s [#] |
| ≤ 0 | 上 | s# | s# | s# | s# | $s^{\#}$ | s [#] | s# |
| $\neq 0$ | 1 | s# | s# | s# | s [#] | $s^{\#}$ | s [#] | s [#] |
| ≥ 0 | 1 | s [#] | $s^{\#}$ | s# | s [#] | $s^{\#}$ | s [#] | s [#] |
| Τ | 上 | $s^{\#}$ | $s^{\#}$ | $s^{\#}$ | s [#] | $s^{\#}$ | s [#] | s [#] |

| 0. / 0. | | < 0 | = 0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | T |
|-------------|---|----------|----------|-----|----------|----------|----------|----|
| $e_1 < e_2$ | | <u> </u> | - 0 | / 0 | 20 | 70 | <u> </u> | ' |
| | 1 | 1 | \perp | | | | <u> </u> | |
| < 0 | T | s# | 上 | 上 | s# | s# | 上 | s# |
| =0 | 1 | $s^{\#}$ | \perp | 1 | s# | $s^{\#}$ | \perp | s# |
| > 0 | 1 | s# | $s^{\#}$ | s# | s# | s# | $s^{\#}$ | s# |
| ≤ 0 | | s# | \perp | | s# | s# | 1 | s# |
| $\neq 0$ | T | s# | $s^{\#}$ | s# | s# | $s^{\#}$ | $s^{\#}$ | s# |
| ≥ 0 | T | s# | s# | s# | s# | s# | $s^{\#}$ | s# |
| Т | 1 | s# | $s^{\#}$ | s# | s# | $s^{\#}$ | $s^{\#}$ | s# |

| x < e | T | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Τ |
|----------|---|----------------|----------|-----|------------------------|------------------------|----------|-------------------------|
| | 1 | 上 | 上 | 上 | 1 | 上 | 上 | 1 |
| < 0 | T | s# | Τ | Τ | $s^{\#}[x \mapsto <0]$ | $s^{\#}[x \mapsto <0]$ | Τ | $s^{\#}[x \mapsto < 0]$ |
| =0 | T | s# | | Τ | $s^{\#}[x \mapsto <0]$ | $s^{\#}[x \mapsto <0]$ | 1 | $s^{\#}[x \mapsto < 0]$ |
| > 0 | T | s# | $s^{\#}$ | s# | s [#] | s [#] | s# | s [#] |
| ≤ 0 | 1 | s [#] | 1 | 1 | $s^{\#}[x \mapsto <0]$ | $s^{\#}[x \mapsto <0]$ | 1 | $s^{\#}[x \mapsto <0]$ |
| $\neq 0$ | T | s# | $s^{\#}$ | s# | s [#] | s [#] | s# | s [#] |
| ≥ 0 | T | s# | $s^{\#}$ | s# | s [#] | s [#] | s# | s [#] |
| Т | 1 | s# | $s^{\#}$ | s# | s [#] | s [#] | s# | s# |

| 0. > 0. | | < 0 | =0 | > 0 | < 0 | -/ 0 | > 0 | T |
|-------------|---|----------|----------|-----|----------|-----------------|----------|----------|
| $e_1 > e_2$ | | < 0 | = 0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | ' |
| | | 1 | 上 | ⊥ | 1 | 1 | \perp | <u> </u> |
| < 0 | 1 | s# | s# | s# | s# | s# | $s^{\#}$ | s# |
| =0 | 1 | | 1 | s# | 1 | s# | $s^{\#}$ | s# |
| > 0 | 上 | | 1 | s# | 1 | s# | $s^{\#}$ | s# |
| ≤ 0 | T | s# | s# | s# | s# | s# | $s^{\#}$ | s# |
| $\neq 0$ | 1 | $s^{\#}$ | $s^{\#}$ | s# | s# | s# | $s^{\#}$ | s# |
| ≥ 0 | 1 | 1 | 1 | s# | 1 | s# | $s^{\#}$ | s# |
| Т | 1 | s# | $s^{\#}$ | s# | s# | s# | $s^{\#}$ | s# |

| x > e | T | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|----------|---------|----------------|----------|-----|----------|-------------------------|-------------------------|-------------------------|
| | \perp | | \perp | | \perp | 1 | 上 | 1 |
| < 0 | T | s [#] | $s^{\#}$ | s# | $s^{\#}$ | $s^{\#}$ | s [#] | s [#] |
| =0 | 1 | | \perp | s# | | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ |
| > 0 | 1 | | \perp | s# | | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ |
| ≤ 0 | T | s# | $s^{\#}$ | s# | s# | s [#] | s [#] | s [#] |
| $\neq 0$ | T | s# | $s^{\#}$ | s# | $s^{\#}$ | s [#] | s [#] | s [#] |
| ≥ 0 | T | 1 | Τ | s# | 1 | | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ |
| Τ | T | s [#] | $s^{\#}$ | s# | $s^{\#}$ | s [#] | s [#] | s [#] |

| $e_1 \leq e_2$ | | < 0 | = 0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|----------------|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | 1 | 1 | | 1 | 1 | | i |
| < 0 | | s [#] | | - | s [#] | s# | + | s [#] |
| =0 | | s# | s [#] | - | s# | s# | s [#] | s [#] |
| > 0 | _ | s# | s [#] | s [#] | s# | s# | s# | s [#] |
| ≤ 0 | 1 | s# | s# | i i | s# | s# | s# | $s^{\#}$ |
| $\neq 0$ | 1 | s# | s# | s [#] | s# | s# | s# | s [#] |
| ≥ 0 | 1 | s# | s# | s# | s [#] | s [#] | s# | s# |
| T | Ī | s# |

| $x \leq e$ | Τ | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Τ |
|------------|---------|----------|----------|----------|------------------------|------------------------|-------------------------|----------------------------|
| | T | | 上 | 上 | 1 | | 1 | 1 |
| < 0 | \perp | $s^{\#}$ | 1 | | $s^{\#}[x \mapsto <0]$ | $s^{\#}[x \mapsto <0]$ | | $s^{\#}[x \mapsto <0]$ |
| =0 | T | s# | s# | | s# | $s^{\#}[x \mapsto <0]$ | $s^{\#}[x \mapsto = 0]$ | $s^{\#}[x \mapsto \leq 0]$ |
| > 0 | T | s# | s# | s# | s [#] | s [#] | s [#] | s [#] |
| ≤ 0 | \perp | $s^{\#}$ | $s^{\#}$ | | $s^{\#}$ | $s^{\#}[x\mapsto <0]$ | $s^{\#}[x \mapsto = 0]$ | $s^{\#}[x \mapsto \leq 0]$ |
| $\neq 0$ | \perp | s# | $s^{\#}$ | $s^{\#}$ | $s^{\#}$ | $s^{\#}$ | $s^{\#}$ | s [#] |
| ≥ 0 | T | s# | s# | s# | s [#] | s [#] | s [#] | s [#] |
| Т | 1 | $s^{\#}$ | $s^{\#}$ | s# | s [#] | $s^{\#}$ | $s^{\#}$ | s [#] |

| $e_1 \ge e_2$ | T | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|---------------|---|----------|----------|----------------|----------|----------------|----------|----|
| | 1 | | \perp | 上 | 上 | 上 | 上 | Ι |
| < 0 | T | s# | $s^{\#}$ | s# | s# | s [#] | $s^{\#}$ | s# |
| =0 | T | 1 | $s^{\#}$ | s [#] | s# | s# | s# | s# |
| > 0 | T | 1 | | s# | T | s# | s# | s# |
| ≤ 0 | T | s# | $s^{\#}$ | s# | s# | s# | s# | s# |
| $\neq 0$ | 1 | $s^{\#}$ | $s^{\#}$ | s# | s# | $s^{\#}$ | $s^{\#}$ | s# |
| ≥ 0 | T | 1 | $s^{\#}$ | s# | s# | s# | $s^{\#}$ | s# |
| Т | | s# | $s^{\#}$ | s [#] | s# | s# | s# | s# |

| $x \ge e$ | 1 | < 0 | =0 | > 0 | ≤ 0 | $\neq 0$ | ≥ 0 | Т |
|-----------|---|----------|----------|----------|-------------------------|-------------------------|-------------------------|----------------------------|
| \perp | 1 | 1 | \perp | | | | | |
| < 0 | 1 | $s^{\#}$ | $s^{\#}$ | $s^{\#}$ | $s^{\#}$ | $s^{\#}$ | s [#] | s [#] |
| =0 | 1 | | $s^{\#}$ | $s^{\#}$ | $s^{\#}[x \mapsto = 0]$ | $s^{\#}[x \mapsto > 0]$ | s [#] | $s^{\#}[x \mapsto \geq 0]$ |
| > 0 | 上 | 1 | | s# | | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ | $s^{\#}[x \mapsto > 0]$ |
| ≤ 0 | 1 | s# | $s^{\#}$ | s# | s [#] | s [#] | s [#] | s [#] |
| $\neq 0$ | 1 | s# | $s^{\#}$ | s# | s [#] | s [#] | s [#] | s [#] |
| ≥ 0 | 1 | 1 | $s^{\#}$ | s# | $s^{\#}[x \mapsto = 0]$ | $s^{\#}[x \mapsto > 0]$ | s [#] | $s^{\#}[x \mapsto \geq 0]$ |
| T | 1 | s# | $s^{\#}$ | s# | s [#] | s [#] | s [#] | s [#] |