X3.1 (minimum in a bunch) Let A be a bunch of numbers. Let $\downarrow A$ denote the minimum number in A. It has precedence 2. Formally define $\downarrow A$.

After trying the question, scroll down to the solution.

§ $\downarrow A = \Downarrow m: A \cdot m$

The question says "the minimum number in A", from which we might suppose that A must be nonempty. If A is nonempty, then $\Downarrow m: A \cdot m$ is the minimum number in A. If A is empty, we might say that it has no minimum number, so what should the answer be? The useful answer is the identity for minimum, which is ∞, which is what $\Downarrow m: A \cdot m$ is.

Another way to define $\downarrow A$ is as follows.

$\downarrow null = \infty$
$\downarrow x = x$ where x is an element
$\downarrow(A, B) = \downarrow A \downarrow \downarrow B$
$\downarrow \S x: A \cdot b = \Downarrow x: A \cdot$ **if** b **then** x **else** ∞ **fi**