1. **Analyse** this argument and *explain why it is not valid*:

   The temperature in Amsterdam is rising.
   The temperature in Amsterdam = The temperature in Prague.
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   The temperature in Prague is rising.

   Hint: The terms 'temperature in Amsterdam' and 'the temperature in Prague' denote *magnitudes* of type $\tau_{\tau\omega}$. We construct them like this:
   $\lambda w\lambda t\ [^0Temperature\_in_{wt}\ ^0Amsterdam]$, $\lambda w\lambda t\ [^0Temperature\_in_{wt}\ ^0Prague]$,
   where $Temperature\_in/(\tau\iota)_{\tau\omega}$.

2. **Prove the validity of this argument:**

   The Mayor of Ostrava visited Brno.
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   The Mayor of Ostrava exists.

   In which supposition does the meaning of 'the Mayor of Ostrava' occur in the premise and in which supposition in the conclusion?

3. **Analyse:**

   For all numbers x holds that dividing x by 0 is improper.

   Hint: Apply *Improper*/$(o*_1)$: the set of constructions v-improper for every valuation v.

4. **Determine,** to which construction is a given construction $v(\pi/x)$-congruent, i.e., it v-constructs the same object for the valuation that associates x with the number π:

   $[^0Sub\ [^0Tr\ x]\ ^0y\ ^0[^0Sin\ y]]$

   $^2[^0Sub\ [^0Tr\ x]\ ^0y\ ^0[^0Sin\ y]]$

5. What does the construction $[^0Sub\ [^0Tr\ x]\ ^0y\ ^0[^0Wife\_of_{wt}\ y]]$ $v(John/x)$-construct?