Problem 02: Greatest Common Denominator

Given two natural numbers x and y, compute the greatest common denominator.

$$
\begin{array}{rcccccc}
A & = & \mathbb{N} & \times & \mathbb{N} & \times & \mathbb{Z} \\
 & & x & & y & & z \\
B & = & \mathbb{N} & \times & \mathbb{N} & & \\
 & & x' & & y' & & \\
Q & = & (x' = x) \wedge (y' = y) & & & & \\
R & = & Q \wedge (z|x) \wedge (z|y) \wedge \forall k \in [z+1, \min(x,y)] : (k \not| x \vee k \not| y) & & & &
\end{array}
$$