$\forall x (\exists y\ Q(x,y)) \Rightarrow \exists y (\forall x\ Q(x,y))$

If (true) then (true)

$Q(x,y)$: $x > y$

x y $Q(x,y)$ — True / False

$x > y$

$y = -\infty$

$x \in \mathbb{N}$ $y \in \mathbb{N}$

$p_1 p_2 p_3$

2, 3, 5

$q = p_1 p_2 p_3 + 1 = 30 + 1 = 31$ ← not prime

$p_1 p_2 p_3$

$p \mid 31$

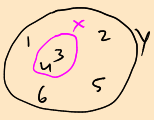
$p \mid (31 - 1)$

1, n, n/n, n

$x \in f^{-1}(A \cap B) = \{x \mid f(x) \in A \cap B\}$

$\in f^{-1}(A) \cap f^{-1}(B) = \{x \mid f(x) \in A\} \cap \{x \mid f(x) \in B\}$

$f^{-1}(A \cap B) = f^{-1}(A) \cap f^{-1}(B)$



$X = Y$

$X \subset Y$

$Y \subset X$

$\forall x \in X,\ x \in Y$

$f(x) = x^2$

$-2 \in f^{-1}(\{4, 25\}) = \{2, 5, -2, -5\}$

$f^{-1}(\{4, 25, 36\}) \cap f^{-1}(\{81, 4, 25\})$

-2 $\cap$ -2