

3. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = x^2$ for all $x \in \mathbb{R}$. Use set notations (for example, $\cup, \cap, -$) and interval notations to simplify the sets $f(f^{-1}[-1, 3])$ and $f^{-1}(f[-1, 3])$. (8 points)

① $f^{-1}[-1, 3]$

$[-1, 3]$

$[-1, 3]$

$f[-1, 3]$

$f^{-1}(f[-1, 3]) = [-3, 3]$

②