$$f(n) = \begin{cases} n/2, & n \text{ even}, \\ (1-n)/2, & n \text{ odd}. \end{cases} \quad f^{-1}(a) = \begin{cases} 2a, & a > 0, \\ 1-2a, & a \leq 0 \end{cases}$$

- If n even, then

$$f^{-1}(f(n)) = f^{-1}(n/2) = 2(n/2) = n.$$

- if n is odd, then

$$f^{-1}(f(n)) = f^{-1}((1-n)/2) = 1 - 2((1-n)/2) = 1 - (1-n) = n$$

- if $a > 0$, then

$$f(f^{-1}(a)) = f(2a) = (2a)/2 = a,$$

- if $a \leq 0$, then

$$f(f^{-1}(a)) = f(1-2a) = \frac{1-(1-2a)}{2} = \frac{2a}{2} = a.$$