The real function f is defined by

$$f(x) = \frac{1}{1+\sqrt{x}}.$$

(a) Is $f(x)$ an even function, an odd function or neither?

(b) What is the largest possible domain for f, and what is its range over that domain?

(c) Find the inverse function $f^{-1}(x)$.

(d) Verify that provided x lies in an appropriate domain

$$f\big(f^{-1}(x)\big) = x.$$