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

$Z = x \qquad N = 1+\sqrt{x}$

$Z' = 1 \qquad N' = \frac{1}{2\sqrt{x}}$

$$f'(x) = \frac{1\cdot(1+\sqrt{x}) - \frac{1}{2\sqrt{x}}\cdot x}{(1+\sqrt{x})^2}$$

$$= \frac{1+\sqrt{x} - \frac{\sqrt{x}}{2}}{(1+\sqrt{x})^2}$$

$$= \frac{2+2\sqrt{x}-\sqrt{x}}{2(1+\sqrt{x})^2}$$

$$= \frac{2+\sqrt{x}}{2(1+\sqrt{x})^2}$$

$$\frac{x}{\sqrt{x}} = \frac{\left(\sqrt{x}\right)^2}{\sqrt{x}} = \sqrt{x}$$