

From Section 1.2.2 we know that the golden ratio  $\varphi$  is defined as  $\varphi^2 = \varphi + 1$ .

Let  $x$  be  $\varphi$ , rewrite as  $x^2 = x + 1$  and divide both sides by  $x$  to get  $x = 1 + \frac{1}{x}$ .

Let  $f(x) = 1 + \frac{1}{x}$ , which means  $f(x) = x$ , thus  $x$  is a fixed point of the function  $f$ .

Therefore, the golden ratio  $\varphi$  is a fixed point of the transformation  $x \mapsto 1 + \frac{1}{x}$ .