

$$\underline{f(x) = 3x}$$

onto let $a \in \mathbb{R}$.

Then $\frac{a}{3} \in \mathbb{R}$

and $f\left(\frac{a}{3}\right) = 3 \cdot \frac{a}{3} = a$

Given any real number, a , there is another real number $\frac{a}{3}$ such that $f\left(\frac{a}{3}\right) = a$

one-to-one Let $a, b \in \mathbb{R}$

such that $f(a) = f(b)$

then $\frac{3a}{3} = \frac{3b}{3}$

so $a = b$

[if $f(a) = f(b)$ then $a = b$]

homomorphism let $a, b \in \mathbb{R}_{++}$

$$f(a) + f(b) = 3a + 3b$$

$$f(a+b) = 3(a+b) = 3a + 3b$$

so $f(a) + f(b) = f(a+b)$