, But ( R , +, ∘ ) is not a ring

because the left distributive law is not achieved f ∘ . ( g + h) ≠ (f ∘ g ) + ( f ∘ h )

.But (hom R ,+, ∘ ) is a ring with identity

. Where ( f + g )(a) = f(a) ∗ g(a)

solution: The Proof of ( hom G , + ) is a belian group

is simmilarty to the previous proof

Now, to Prove ( hom G ,∘) is semi group

f(a) ∘ g(a) ∈ R ( f ∘ g ) ∘h )(a) = ( f ∘ g ) = (a)( f ∘ g ) (a) ∘ h(a) = ( f(a) ∘ g(a) ) ∘ h(a)

f(a) ∘ (g(a) ∘ h(a) ) = f(a) ∘ ( ( g ∘ h )(a)) = ( f ∘ ( g ∘ = h) )(a)

. Hence ( hom G , ∘ ) is semi group

Note: The inverse of each function in hom G is ∀ f , ∈ hom G ∃ -f ∈ hom G

such that (-f)(a) = f $(a)^{-1}$ ∈ hom G And the closed , we can show that 7 $( f + g )( a \ast b) = f (a \ast b) \ast g (a \ast b) = f(a) \ast f(b) \ast g(a) \ast g (b) = f(a) \ast g(a) \ast f (b) \ast g(b) \ast (f + g )(b)$ .

: Finily ; we must prove the distripative laut

$f ( ( g + h)(a) ) = f (g (a) + h(a) ) =$ = (a)[ $f \circ ( g + h)$ ] $f ( g(a) ) \ast f ( h (a) ) = ( f \circ g )(a) \ast ( f \circ h)(a) = ( f \circ g + f \circ h )(a)$ .

,By the Same way

we can prove that $( f \circ ( g + h) )(a) = ( f \circ g + f \circ h )(a)$

. Therefore ( hom G , + , ∘ ) is a ring