

E.I. - $\exists x (Fx \wedge Gx)$ - $\exists x (Fx \wedge Gx)$ - $\exists x (Fx \wedge Gx)$

Principle of Existential Instantiation (E.I.)
If $\exists x (Fx \wedge Gx)$ is true, then there is some individual a such that $Fa \wedge Ga$ is true.
① $\exists x (Fx \wedge Gx) \vdash Fa \wedge Ga$ (where a is a new constant)
② $\exists x (Fx \wedge Gx) \vdash Fa$
③ $\exists x (Fx \wedge Gx) \vdash Gx$

E.I. for $\forall$ - $\exists x (Fx \wedge Gx) \vdash Fa \wedge Ga$
where a is a new constant.
E.I. for $\exists$ - $\exists x (Fx \wedge Gx) \vdash Fa$
E.I. for $\forall$ - $\exists x (Fx \wedge Gx) \vdash Gx$

E.G. - $\exists x (Fx \wedge Gx)$ - $\exists x (Fx \wedge Gx)$
Let a be an individual such that $Fa \wedge Ga$ is true.
Then Fa is true and Ga is true.
Therefore $\exists x (Fx \wedge Gx)$ is true.

Principle of Existential Generalisation (E.G.)
If Fa is true, then $\exists x (Fx)$ is true.
E.G. for $\exists$ - $Fa \vdash \exists x (Fx)$
E.G. for $\forall$ - $Fa \vdash \exists x (Fx)$