

$$(\lambda f. \lambda x. f (f x)) (\lambda y. y+1) 2$$

$$\Rightarrow (\lambda x. (\lambda y. y+1)((\lambda y. y+1) x)) 2$$

$$\Rightarrow (\lambda y. y+1) ((\lambda y. y+1)2)$$

$$\Rightarrow (\lambda y. y+1)(2+1)$$

$$\Rightarrow 2+1+1$$