

1. not every virtuous woman is happy

not	every	virtuous	[mod]	person	is happy
$\lambda\Phi\sim\Phi$	$\lambda P\lambda Q\forall x\{Px\rightarrow Qx\}$	λxVx	$\lambda Q\lambda P\lambda x\{Px\&Qx\}$	λxPx	λxHx
		$\lambda P\lambda x\{Px\&Vx\}$			
		$\lambda x\{Px\&Vx\}$			
		$\lambda Q\forall x\{\{Px\&Vx\}\rightarrow Qx\}$			
		$\forall x\{\{Px\&Vx\}\rightarrow Hx\}$			
$\sim\forall x\{\{Px\&Vx\}\rightarrow Hx\}$					

2. the man next-to Kay is Kay's father

the	man	[mod]	next-to	Kay	is	Kay	's father
$\lambda P\lambda xPx$	λxMx	$\lambda Q\lambda P\lambda x\{Px\ \&\ Qx\}$	$\lambda y\lambda xNxy$	K	$\lambda y\lambda x[x=y]$	K	$\lambda x\{f(x)\}$
			$\lambda xNxK$			f(K)	
			$\lambda P\lambda x\{Px\ \&\ NxK\}$			$\lambda x[x=f(K)]$	
			$\lambda x\{Mx\ \&\ NxK\}$				
			$\lambda x\{Mx\ \&\ NxK\}$				
$\lambda x\{Mx\ \&\ NxK\} = f(K)$							

3. no friend of Kay respects Jay.

no	friend-of	Kay	respects	Jay
$\lambda P\lambda Q\sim\exists x\{Px\ \&\ Qx\}$	λxF_xK	$\lambda y\lambda xFxy$	K	$\lambda y\lambda xRxy$
		λxR_xJ		
		$\lambda Q\sim\exists x\{F_xK\ \&\ Qx\}$		
		$\sim\exists x\{F_xK\ \&\ R_xJ\}$		

4. every woman who respects Jay's father respects Kay's mother

every	woman	who	respects	Jay	's father	respects	Kay	's mother
$\lambda P\lambda Q\forall x\{Px\rightarrow Qx\}$	λxWx	$\lambda Q\lambda P\lambda x\{Px\&Qx\}$	$\lambda y\lambda xRxy$	J	$\lambda x\{f(x)\}$	$\lambda y\lambda xRxy$	K	$\lambda x\{m(x)\}$
				$f(J)$			m(K)	
				$\lambda P\lambda x\{Px\ \&\ R[x,f(J)]\}$			$\lambda xR[x,m(K)]$	
				$\lambda x\{Wx\ \&\ R[x,f(J)]\}$				
				$\lambda Q\forall x\{\{Wx\ \&\ R[x,f(J)]\}\rightarrow Qx\}$				
$\forall x\{\{Wx\ \&\ R[x,f(J)]\}\rightarrow R[x,m(K)]\}$								