Page 158 #6. 'If Fermat was a French mathematician, then he was famous.' Our domain of discourse ($\mathcal{D}$), predicates (R, M, F), and individual constant (*i.e.*, the proper name of the individual person Fermat) (f) are:

$M\_$: _ is a mathematician	$R\_$: _ is French
$F\_$: _ is famous	f : Fermat
$\mathcal{D}$: people	

In "Loglish," we have 'If Rf and Mf, then Ff'. In LMPL, this becomes: '$(Rf \,\&\, Mf) \rightarrow Ff$'.

Page 158 #16. 'If no wealthy economist exists then no famous mathematician exists.' Our domain of discourse ($\mathcal{D}$) and predicates (W, E, F, M) are:

$W\_$: _ is wealthy	$E\_$: _ is an economist
$F\_$: _ is famous	$M\_$: _ is a mathematician
$\mathcal{D}$: people	

In "Loglish," we have 'If there does not exist an x such that both Wx and Ex, then there does not exist an x such that both Fx and Mx'. In LMPL, this becomes the following: '$\sim(\exists x)(Wx \,\&\, Ex) \rightarrow \sim(\exists x)(Fx \,\&\, Mx)$'.

Page 165 #5. 'If it rains, only the killjoys will be happy.' Our domain of discourse ($\mathcal{D}$), predicates (K, H), and atomic sentence letter (R) are as follows:

$K\_$: _ is a killjoy	R : 'It rains.'
$H\_$: _ is happy	$\mathcal{D}$: people

In "Loglish," we have 'If R, then only the K's will be H'. Or, in other words, 'If R, then all H's will be (the) K's'. In LMPL, this is: '$R \rightarrow (\forall x)(Hx \rightarrow Kx)$'. Here, '$R \rightarrow (\forall x)(Hx \leftrightarrow Kx)$' is also defensible, since the English sentence says '***the*** killjoys'.

Page 165 #15. 'No voter will be satisfied unless some politician who is elected is incorrupt.' Lexicon:

$E\_$: _ is elected	$P\_$: _ is a politician
$C\_$: _ is corrupt	$V\_$: _ is a voter
$S\_$: _ is satisfied	$\mathcal{D}$: people

This sentence says: $\ulcorner p$ unless $q\urcorner$, where p says 'There does not exist an x such that Vx and Sx', and q says 'There exists an x such that Ex and Px and not Cx'. In LMPL, p is '$\sim(\exists x)(Vx \,\&\, Sx)$', and q is '$(\exists x)[(Px \,\&\, Ex) \,\&\, \sim Cx]$'. Recall, $\ulcorner p$ unless $q\urcorner$ is symbolized *either* as $\ulcorner \sim q \rightarrow p\urcorner$ (p. 23) *or* as $\ulcorner p \vee q\urcorner$ (p. 57). So, both:

$$`\sim(\exists x)[(Px \,\&\, Ex) \,\&\, \sim Cx] \rightarrow \sim(\exists x)(Vx \,\&\, Sx)'$$

and

$$`\sim(\exists x)(Vx \,\&\, Sx) \vee (\exists x)[(Px \,\&\, Ex) \,\&\, \sim Cx]'$$

are acceptable.

Page 179 #5.
The existential claim '$(\exists x)(Ix \rightarrow Hx)$' is true on $\mathcal{I}$, because its instance '$Ia \rightarrow Ha$' is true on $\mathcal{I}$, since $\alpha \notin \mathrm{Ext}(I)$.

Page 179 #9. The universal claim '$(\forall x)(\exists y)[Fx \rightarrow (Hx \vee Jy)]$' is true on $\mathcal{I}$, since all three of its instances are true on $\mathcal{I}$: (*i*) the existential claim '$(\exists y)[Fa \rightarrow (Ha \vee Jy)]$' is true on $\mathcal{I}$ because its instance '$Fa \rightarrow (Ha \vee Ja)$' is true on $\mathcal{I}$, since $\alpha \in \mathrm{Ext}(H)$. (*ii*) '$(\exists y)[Fb \rightarrow (Hb \vee Jy)]$' is true on $\mathcal{I}$ because its instance '$Fb \rightarrow (Hb \vee Ja)$' is true on $\mathcal{I}$, since $\beta \in \mathrm{Ext}(H)$. Finally, (*iii*) '$(\exists y)[Fc \rightarrow (Hc \vee Jy)]$' is true on $\mathcal{I}$ because its instance '$Fc \rightarrow (Hc \vee Ja)$' is true on $\mathcal{I}$, since $\alpha \in \mathrm{Ext}(J)$.

Page 179 #11.
'$(\exists x)(Ix \rightarrow (\forall y)(Jy \rightarrow Iy))$' is true on $\mathcal{I}$, since its instance (*i*) '$Ia \rightarrow (\forall y)(Jy \rightarrow Iy)$' is true on $\mathcal{I}$. Instance (i) is true on $\mathcal{I}$, because its antecedent 'Ia' is false on $\mathcal{I}$. 'Ia' is false on $\mathcal{I}$, since $\alpha \notin \mathrm{Ext}(I)$.

Page 179 #12.
'$(\forall x)(\forall y)[(Fx \leftrightarrow Gy) \leftrightarrow (\exists w)(\exists z)(Hw \,\&\, Jz)]$' is false on $\mathcal{I}$, since its instance (*i*) '$(\forall y)[(Fa \leftrightarrow Gy) \leftrightarrow (\exists w)(\exists z)(Hw \,\&\, Jz)]$' is false on $\mathcal{I}$. Instance (*i*) is false on $\mathcal{I}$, because *its* instance (*i*.1) '$(Fa \leftrightarrow Ga) \leftrightarrow (\exists w)(\exists z)(Hw \,\&\, Jz)$' is false on $\mathcal{I}$. The biconditional (*i*.1) is false, because its left-side '$Fa \leftrightarrow Ga$' is false [since $\alpha \in \mathrm{Ext}(F)$ but $\alpha \notin \mathrm{Ext}(G)$], but its right-side ($i.1r$) '$(\exists w)(\exists z)(Hw \,\&\, Jz)$' is true. ($i.1r$) is true on $\mathcal{I}$, because its instance ($i.1r$.1) '$(\exists z)(Ha \& Jz)$' is true on $\mathcal{I}$. Finally, ($i.1r$.1) is true on $\mathcal{I}$, because *its* instance ($i.1r$.1.1) '$Ha \,\&\, Ja$' is true on $\mathcal{I}$ [since both $\alpha \in \mathrm{Ext}(H)$ and $\alpha \in \mathrm{Ext}(J)$].