

Gca a YfZYf]Yb']b'? O`b. FY]gYgY[Yb'i bX ZYgh`]WXY'; chhYgX]YbghY°



9gWX Yf 'GhfU's Y '%* \$ ž') \$ + ' - '? Ô'b ž'8 Yi hgWX `Ub X '! 'A]h'XYb Gca a YfZYf]Yb'j cf'XYf'HØf'`Ài hYh'X]Y 'GhUXh'? Ô'b 'Y]bY'NY]h'XYf 6Y[Y[bi b[ž'XYg'; `Ui VYbg'i bX'XYf'[Ya Y]bgUa Yb'9f`YVb]ggY'Y]b" K À\fYbX'XYf': Yf]Ybk cWXYb'k YfXYb']b'XYb'\]Yg][Yb ?]fWXYb[Ya Y]bXYb'nU\`fY]WXY'J YfUbghU`hi b[Yb'ZØf'?]bXYfž \$ [YbX`]WXYž'9`hYfb'i bX'@Y\f_fÀZhY'Ub[YVchYbž'X]Y'ZØf'Fi\Yž GhÀf_i b['i bX'Y]bY'`YVYbX][Y'; Ya Y]bgWXUZh'gcf[Yb"'9]b'Vi bhYf GhfUi's 'Ui g'; chhYgX]YbghYbž': YghYb'i bX'a i g]_U`]gWXYb 8 UfV]Yhi b[Yb'YfK UfhYh'X]Y'? Ò`bYfž'k]Y'? Ô`b'VYf]WXhYh''

9]bYb'VYgcbXYfYb'5i ZhU_h'V]`XYb'X]Y': Y]Yfbž'X]Y'g]W\'i a 'XYb FY]gYgY[Yb'[fi dd]YfYb''5a ') '' \Rightarrow `]'&\$&) 'i a '%+.\$\$'I \f'`ÀXh'X]Y BUh\UbUY`_]fW\Yž'9gW\Yf'GhfU \Rightarrow Y'%* \$ž'ni a 'FY]gYgY[Ybž'[YZc`[h

 $\label{eq:converse_$

J]Y`ZÀ`h][Y'JYfUbghU`hi b[Yb'Ua'*"';i`]

- : Ua]`]Yb[chhYgX]Ybgh'a]h'FY]gYgY[Yb.'%\$.'\$'l\f']b XYf'DYhfig_]fW\Yž'?]Yg_Ui `YfkY[')' ž'a]h'DZUffYf'8Ub]Y` FÒg`Yf"'BYVYb'XYa ; chhYgX]Ybgh'[]Vh'Yg': Ygh`]W_Y]hYb a]h'GbUW_gž'Y]bYf'Hca Vc`U'i bX'A i g]_"
- Gca a YfZYgh']a '?]fWXYb.'%%\$\$'I\f']a
 ?]fWXYb`UXYb'G]bh\Yfbž'5a '<cddYVYf[') ž'ni a
 '!'À\f][Yb'6YghY\Yb"'<]Yf'Yfk UfhYh'X]Y'6Ygi WXYf'Y]b
 : Ua]`]Yb[chhYgX]Ybghž'Aig]_'ibX'; f]``Ub[YVchY"
- FY]gYgY[Yb i bhYf ZfY]Ya '<]a a Y`. '9VYbZU``g'i a
 %%.\$\$`I \f']b`XYf`&\UbbYg_]fW\Y`?`YhhYbVYf[ž
 BcbbYbk Yfh\ghfU» Y'+, ž'a]h`DZUffYf]bbYb`A UfY]_Y`A UY[[]
 i bX'\$\[`]U`GhfYW_Yf"
- : Ua]`]Yb[chhYgX]Ybgh'a]h'HUi ZYf]bbYfi b[.'%%.\$\$ I \f']b'XYf'9f`ÒgYf_]fW\Yž'GØfh\Yf'Ghf"'' (ž'[YghU`hYh'j cb DZUffYf'A]W\UY`'A]Y\Y'i bX'DZUffYf'G]a cb'AUbXYf"
- : Ua]`]Y!FY]gY!GY[Yb!; chhYgX]Ybgh. '%%. %) 'l \f']b'XYf @ h\Yf_]fW\Yž'A Ufh]b!@ h\Yf!D`Uhn'("
- Gca a YfgY[Yb' VY\ØhYh'Xi fW\'X]Y'Gca a YfnY]h .

 I a '%\$.' \$ 'I \f']a '; Ya Y]bXY\Ui g'; bUXYb_]fW\Y'Di `\Y]a ž

 ; i ghUj! < Y]bYa Ubb!GhfU» Y'&, ž'a]h'Y]bYa '; chhYgX]Ybghž

 VY] XYa '? UZZYYž'HYY'i bX'?i W\Yb'gYfj]Yfh'k YfXYb"
- 5VYbX]a di `g`a]h`FY]gYgY[Yb. '%, .\$\$`I \f`]a
 9j Ub[Y`]gWXYb'; Ya Y]bXYnYbhfi a ž'A cbhYggcf]ghfU»Y"

Ni f'6Y`c\bi b['k]b_h'Ua '%%"' \Rightarrow `]'&\$&) 'XYf' A Y\f!U`g!BchYb! GY[Yb 'ZØf'GW\Ø`Yfž'@Y\f_fÀZhY'i bX'9`hYfbž'XYf'Ua '`YhnhYb GW\i`hU['i a '%%.\$\$'I \f'j cf'Gh"'B]_c`Ui gž'6YffYbfUh\Yf'GhfU» Yž ghUhhZ]bXYh"'8Yb'_fÒbYbXYb'5VgW\`i gg'VY]'j]Y`Yb'X]YgYf': Y]Yfb']gh Y]b'[Ya Y]bgUa Yg'D]\W_b]\W_cXYf'Y]bY'; f]``U_h]cbž'X]Y'XUg'_Ò`gW\Y @YVYbg[YZØ\``bcW\`a Y\f'ni f'; Y`hi b['Vf]b[h"

9]b '6`]W_ 'ØVYf'XYb 'HY``YffUbX

#bgd]f]Yfhij cb XYf HfUX]h]cb UbXYfYf; Ya Y]bXYbžk]Y XYa
: Ua]`]Yb[chhYgX]YbghXYf'_Uh\c`]gW\Yb'?]fW\Yb[Ya Y]bXY' 9f`ÒgYf
XYf K Y`h ']b '6fi W_ÒVY`žk]fX 'Ui W\ ']b '? Ò'b 'K Yfh'Ui Z
; Ya Y]bgW\UZh [Y`Y[h" 8cfh'k i fXY 'XYb'?]bXYfbž'X]Y ']\fYb 'I f`Ui V
Ui Zi bhYfgW\]YX`]W\Y K Y]gY '[YghU`hYbž'VY]gd]Y`gk Y]gY 'Y]b'_`Y]bYf
?cZZYf'U`g'Gma Vc``ZØf'XYb'FY]gYgY[Yb'ØVYffY]W\h'i bX'Ui W\ 'X]Y
9fk UW\gYbYb'k i fXYb'a]h'Y]bYa ' J UhYf'I bgYf ']b'j YfgW\]YXYbYb
GdfUW\Yb'VYXUW\h" 8]Y '6chgW\UZh' ¾gi g'VY[`Y]hYh'i bX'gW\Øhnh'X]Y
A YbgW\Yb'Ui W\ 'k À\fYbX']\fYf'Gca a YffY]gYž'k]Y'9f`YbgYY
5_hi Y```VYgW\fY]Vh"

8]Y 'VYj cfghY\YbXYb'J YfUbghU`hi b[Yb'j YfgdfYWXYb'Y]bY
UVk YWXg`i b[gfY]WXY'i bX'VYfY]WXYfbXY'NY]h'ZØf'X]Y'[UbnY
: Ua]`]Y"'CV'VY]a '[Ya Y]bgUa Yb'; YgUb[ž']b'XYf'Gh]``Y'XYg'; YVYhg
cXYf'VY]'ZfÒ\`]WXYb': YghYb' 'X]Y'? Ò`bYf'?]fWXYb[Ya Y]bXYb'`UXYb
U``Y'\Yfn`]WX'Y]bž'a]h'XUVY]'ni 'gY]b'i bX'[Ya Y]bgUa 'Y]bYb
dcg]h]j Yb'5i g_`Ub['XYg'GWXi `'U\fYg'ni 'ZY]Yfb"

8 YhU]`g	
Cfh	9gWXYf~GhfU»Y~%*\$ž~)\$+'-~?Õ~bž~8Yi hgWX~UbX
EiY``Yb	k k k "_]fW\Y!_cY`b"XY
	Yf`YbgYY!U_hi Y``"Wca
	• k k k "_]bXYf[chhYgX]Ybgh!
	_Uh\c`]g\\\\\ "XY