

C`Xh]a Yf!A YYh]b[']b '6UXYb!6UXYb. '9]b : Ygh ZØf '5i hc!@]YV\UVYf °

9f`YVYb`G]Y`XUg`(, "`\DhYfbUh]cbU`Y`C`Xh]a Yf!A YYh]b[`]b 6UXYb!6UXYb`j ca '%%"`V]g`%' "'\J`[\&\$&)`a]h`ØVYf`')\$ \]ghcf]gWXYb`: U\fnYi [Yb"



6UXYb!6UXYbž8Yi hgW `UbX'!' \dangle k Yb][Yb'HU[Yb']gh'Yg'k]YXYf gc'kY]h J ca '%%" V]g'%' "'\dangle \] Z[bXYh'XUg'(, "'\delta hYfbUh]cbU'Y C`Xh]a Yf!A YYh]b[']b'6UXYb!6UXYb'ghUhh''A]h'Yhk U'') \$
Ub[Ya Y'XYhYb': U\fnYi [Yb'Ui g'[Ubn'9i fcdU'Yfk UfhYh'X]Y JYfUbghU'hi b['Y]b'dfÀW\h][Yg'5i Z[YVch'Ub'\]ghcf]gW\Yb
5i hca cV]'Ybž'XUg'X]Y'< YfnYb'XYf'C'Xh]a Yf!: Ubg'\Ò\YfgW\'U[Yb'Aggh''8]Y'JYfUbghU'hi b['j Yfgdf]W\h'b]W\h'bi f'bcghU'[]gW\Y
9a ch]cbYb'i bX'gdUbbYbXY'6Y[Y[bi b[Ybž'gcbXYfb'Ui W\Y]bY [Ubn'VYgcbXYfY'GcbXYfgW\Ui "'8Yf'9\fYb[Ugh'XYf'JYfUbghU'hi b[k]fX'X]Y'hfUX]h]cbgfY]W\Y'A Uf_Y'5i X]'gY]bž'X]Y'j cf'XYf'Hf]b_\U'YY]b'XYf'?U]gYfU`YY']\fY'; YgW\]W\hY'i bX']\fY': U\fnYi [Y'Ui g'a Y\fU'g'%\$\$'\dy\fYb'5i hca cV]'[YgW\]W\hY'i dfÀgYbh]YfYb'k]fX"

'6Y]'X]YgYf'; Y`Y[Yb\Y]h'k]fX'X]Y': Ugn]bUh]cb'fi bX'i a '5i X]'i bX
X]Y'<]ghcf]Y'XYf'5i hc'l b]cbz'ni 'XYf'A Uf_Yb'k]Y'<cfW\z'8?K z'BGI
i bX'K UbXYfYf'nÀ\`Ybz'Yf'YVVUf'gY]b"'5i Z'X]YgY'K Y]gY'k]fX'Y]bY
6fØW_Y'nk]gW\Yb'XYf'HfUX]h]cb'i bX'XYf'Ni _i bZh'[YgW\`U[Ybz'X]Y
XUg'C`Xh]a Yf!A YYh]b['ni 'Y]bYa '9f`YVb]g'ZØf'X]Y'[UbnY': Ua]`]Y
a UW\h'''9]b'J YfUbghU`hi b[ga U[Un]bz'XUg'U`g'D8: 'ni a '6`ÀhhYfb'ni f
J YfZØ[i b['ghY\hz'V]YhYh'k Y]hYfY' \Dzfa Uh]cbYb'ZØf'U``Y
\DhYfYgg]YfhYbz'X]Y'a Y\f'ØVYf'X]Y'j]Y`ZÀ`h][Yb'5_h]j]hÀhYb'i bX
5i gghY``i b[Yb'YfZU\fYb'a ÒW\hYb''8]Y'K YVgY]hY'c`Xh]a Yf!
a YYh]b["XY'\À`h'nU\`fY]W\Y'\Dzfa Uh]cbYb'VYfY]hz'X]Y'J cfZfYi XY
Ui Z'XUg'9j Ybh'a UW\Yb"</pre>

JYf_Y\fgAbXYfib[YbibX 9a dZY\`ib[Yb

: Øf'U```YbYž'X]Y'ni a 'C`Xh]a Yf!A YYh]b['_ca a Yb'a ÒW\hYbž
Ya dZ]Y\`h'X]Y'GhUXhdfYggYghY``Yž'Ybhk YXYf'a]h'XYb'ÒZZYbh`]W\Yb
J Yf_Y\fga]hhY`b'Ubni fY]gYb'cXYf'Ui Z'XUg': U\ffUX
ni fØW_ni [fY]ZYb"'8]Y'< U`hYghY``Y' <]bXYbVi f[d`Uhn'f?'U]gYfU``YYŁ Ž
X]Y'bcfa U`Yfk Y]gY'j cb'XYb'@]b]Yb'&\$) ž'&\$+ž'&%' 'i bX'&%,
VYX]Ybh'k]fXž'k]fX']b'X]YgYf'NY]h'b]W\h'Ub[YZU\fYb"'GhUhhXYggYb
`Y]hYb'X]Y'6i ggY'ØVYf'X]Y'@]gYbghfU» Y']bg'NYbhfi a ž'k c'X]Y
<U`hYghY``Yb' <]bXYbVi f[d`Uhn#GhUXhV]V`]ch\Y_ 'i bX
@Ycdc`Xqd`Uhn'f@]gYbghfU» YŁ 'ni f'J YfZØ[i b['ghY\Yb"</pre>

9]b:YghZØf:fYibXY\]ghcf]gWXYfAcV]`]hÀh

 $8\,Ug^*C^*Xh]a\ Yf!A\ YYh]b\left[\ f]WXhYh^*g]WX^*Ub^*U^*Y^*:fYi\ bXY^*\backslash]ghcf]gWXYf$

A cV]`]hÀh"'8 Ug'9j Ybh'V]YhYh'X]Y'; Y`Y[Yb\Y]hž'b]W\h'bif

5i hca cV]`Yž'gcbXYfb'Ui W\`\]ghcf]gW\Y'NØ[Y'i bX': `i [nYi [Y'ni VYk i bXYfb"'9a ch]cbU`i bX'[YgW\]W\h`]W\'k]fX'\]Yf'j]Y`'[YVchYb"

C`Xh]a Yf'g]bX'b]W\h'bi f': U\fnYi [Yž'gcbXYfb'Ui W\'VYk Y[hY
; YgW\]W\hghf\[A\][Yf\[Z'X]Y'X]Y'[`cffY]W\Y'JYf[Ub[Yb\Y]h'XYf'A cV]`]h\[A\]

_cbgYfj]YfYb"'8]Y'K YVgY]hY'c`Xh]a Yf!j YfUbghU`hi b["XY'V]YhYh
nU\`fY]W\Y'A \[O[`]W_Y]hYb\[Z'X]YgY'\]ghcf]gW\Yb'GW\[A\]hnY'ni

Yf_i bXYb'i bX'gdYn]Y``Y'6Y]hf\[A\][Y'ni 'Z]bXYb"

 $GY]Yb G]Y U gc VYfY]hz \ |ghcf]gWX Y HYWX b]_ii bX @Y]XYbgWX UZh ZØf XUg 5i hca cV]``\Ui hbU\ ini 'Yf YVYb "8 Ug (, " <math>\Rightarrow$ hYfbUh]cbU Y C `Xh]a Yf!A YYh]b[']b 6UXYb!6UXYb k]fX Y]b 9j Ybhz XUg G]Y g]WX Ui Z'_Y]bYb : U```Ybh[Y\Yb ``UggYb 'gc ``hYb *`K Y]hYfY 8YhU]`g Z]bXYb \Rightarrow hYfYgg]YfhY Ui WX Ui Z'XYf GY]hY [ccXbYk g("XY"

8 YhU]`g	
Cfh	6UXYb!6UXYbž'8Yi hgW\`UbX
EiY``Yb	k k k "[ccXbYk g("XY
	• k k k "c`Xh]a Yf!a YYh]b["XY
	c`Xh]a Yf!j YfUbghU`hi b["XY

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z 'bU[!Vk "XY