

FY]gY'ni a '5`VhfUi a .'8]YgY'N]Y`Y'gc``Yb G]Y'hi b`]W\gh'a Y]XYb°

FY]gYk Ufbi b[Yb'i bX'bY[Uh]j Y'9fZU\fi b[Yb'j cb'\dag Zi YbWYfb k YfZYb': fU[Yb'ni f'G]W\Yf\Y]h'i bX'FY]gYVYfY]hgW\UZh'Ui Z''

A Ubm'qhUm'\ca Y''

Gh"'DÒ`hYbž'² ghYffY]WX '! '8]Y 'FY]gYgU]gcb 'ghY\h'j cf'XYf'HØfž
XcWX 'Y]b 'HfYbX']b 'XYb 'gcn]U`Yb 'A YX]Yb 'k]fZh': fU[Yb 'ni f
FY]gYVYfY]hgWX UZh'Ui Z 'H]_Hc_!FY]gYk Ufbi b[Yb 'fUhYb 'XUni ž'ni
<Ui gY'ni 'V`Y]VYb"'9]b '?ca a YbhUf'j cb'Y]bYa '9]b\Y]a]gWXYb']b
Gh"'DÒ`hYb 'VYgWXfY]Vh'X]Y 'GhUXh'U`g'k Yb]['UhhfU_h]j "'8Yf' & Zi YbWYf
?]`]Ub'?fc\`\Uh'XUni 'Ui Z'H]_Hc_'j YfgWX]YXYbY'FY]gYk Ufbi b[Yb
j YfÒZZYbh`]WXhž'X]Y 'nU\`fY]WXY'Bi hnYf'ghUf_'VYY]bZi ggYb"

8 | Y ^ A Y | b i b [Y b ^ Ø V Y f * V Y ^] Y V h Y ^ F Y | g Y n] Y ^ Y ^ g | b X ^ b Y [U h] j " B i h n Y f $VYf]WXhYb^*VY]gd]Y^gk^Y]gY^jcb^*Ygc^cž^*XYggYb^GhfUbX^U^g^^Agg^]WX$ i bX XUg A YYf U`g gh]b_YbX VYgW\f]YVYb k]fX" F]a]b] \ Uh Y]bYb hfUia Uh]g]YfhYb BihnYf\]bhYf`UggYbžk À\fYbX 6]V]cbY XifW hYi fYgʻ9ggYbʻi bXʻj]Y`YʻÒghYffY]WX]gWXYʻi bXʻXYi hgWXYʻHci f]ghYb bY[Uh]j 'Ui ZZÀ``h"'5i W. 'DUf]g'k]fX'U`g' UV[YfUbnh'\cW.'%\$ 'i bX'a]h $Y]bYa FUhhYbdfcV`Ya _f]h]g]Yfh" <math>\Rightarrow @]ggUVcb gcf[Yb \c\Y'<\emptyset[Y`$ ZØf'UbghfYb[YbXY':i»kY[YžkÀ\fYbX'; fUb'7UbUf]U'U`g jYfhfcW_bYhibX'VfUib'kU\f[YbcaaYb'k]fX"'KYhhYfibX ; Yc[fUZ]Yg]bXUiWMbAUXY]fUY]bHYAUžkchA[`]WXYfFY[YbibX`Yb[Y`GhfU»Yb`XYb`GdU»`|YfXYfVYb"`BihnYf`Ài»Yfb`niXYa AU[YbdfcV`YaY'kY[Yb'XYf'Vi`[Uf]gW\Yb'?ØW\Y'ibX'VYf]W\hYb jcbibZfYibX`]WXYbAYbgWXYbgck]YgWX`YWXhYa 9ggYbUiZ F\cXcg"9]b VYgcbXYfg XfUgh]gWXYf 6Yf]WXhighUa a hiUi g 5i ghfu`]Ybžkc'Y]b'Bi hnYf'icb'Y]bYa '?Àb[ifi 'iYf`Yhnh'kifXY'ibX]b X]Y B c hUi Zb U\a Y a i gghY"

8]Y: `i h'XYf'gcn]U`Yb'A YX]Yb'i bX']\fY F]g]_Yb

DUfU``Y``ni `X]YgYb`FY]gYk Ufbi b[Yb`b]a a h`X]Y`5bnU\``XYf

\$\tilde{D}Zi YbWYf\tilde{Z}\]Y`Z\Tof?`]\W_g`i bX`@]_Yg`Ui W\`[YZ\\f`]\W\Y`FY]gYb`Ui Z

g]\W\`bY\a Yb\tilde{Z}\XfUgh]g\W\`ni "'\Tof]b`6Y]gd]Y``]gh`XYf`\Mci hi VYf`A m_\U]`c

Dc`mU_cj \tilde{Z}\XYf`Ui Z`\X]Y`j YfVchYbY`]bX]g\W\Y\\$gY``Bcfh\``GYbh]bY`

fY]ghY\tilde{Z}\iangle a '\tilde{Z}\jYj YfVchYbY`]bX]g\W\Y\\$gY``Bcfh\``GYbh]bY`

fY]ghY\tilde{Z}\iangle a '\tilde{Z}\jYj Yf\YchYbY\]bYa ']gc`]YfhYb`GhUa a '\Ui Zni bY\a Yb"'\Tof\
\]b\Yf\]Y\s`Y]bY`\To`\U!\8cgY`\U`g`; \Yg\W\Yb_ \tilde{Z}\k\Ug'j cb

A \Ybg\W\Ybf\Y\\k\hgcf[\Ub]g\Uh]cb\Yb`\k\]Y`\Gi fj]j \U``\\$h\Yfb\Uh]cb\U``\U`g

f\To\W_g]\W\hg`cg`_f]h]g]\Yfh`\k\ i f\X\''\T\Ufc`]bY`\D\Y\Uf\W\`Ai\s\Yfh\Y\tilde{X}\Ugg

Dc`m\U_cj \X\UXi f\W\`dch\Ybn]\Y``\X\Ug`@\Y\Yb`\X\Yg`\GhUa a \Yg

[\YZ\\fX\hf\Y''

5 i W. ' \approx g\i U'5``[Y]Yfž'Y]b'XYi hgW.Yf'FY]gYV`c[[Yfž'[Yf]Yh']b B][Yf]U']b'Y]bY'[YZÀ\f`]W.Y'G]hi Uh]cbž'U`g'Y]bY'; Ub['j Yfgi W.hYž]\b'ni 'YbhZØ\fYb"'BYVYb'5``[Y]Yf']gh'A Uf]bi g'CVYfa U]f'Y]b k Y]hYfYf'XYi hgW.Yf' \Rightarrow Zi YbW'fž'XYf'c\bY'; Y`X'Xi fW. 'XYb'8Uf]Åb; Ud']b'A]hhY`Ua Yf]_U'k UbXYfh"'8]YgY'FY[]cb'[]`h'U`g'YI hfYa [YZÀ\f`]W."

5VYbhYi YfcXYf =bgnYb]Yfi b[3

 $8 \ Ug^{9}X[YbOgg]gWXY^8YdUfhYaYbh^ZOf^Uigk Afh][Y^5b[YYY[YbY]hYb^fAh^Xf]b[YbX^jcb^FY]gYb^bUWX^B][Yf]U^ibX\\ BcfX_cfYU^UV^zk^c^j]Y^Y+D^ziYbWYf^UiW^+D^UA^bV^+[YbYf]YfYb''\\ 9]b][Y^YifcdA]gWXY^+D^ziYbWYf^bU\aYb^Ua^D^Ob[^Ub[!AUfUh\cbhY]^zk^Ug^X]Y^F]g]_Yb^gc^WXYf^FY]gYb^jYfXYih^jWXh''^J]Whcf]Ug^FcgYK^U^Xf]d^]bgnYb]YfhY^gc[Uf^Y]bY^;YZU\fYb^U[Y^]b^B][Yf]U^zia^5iZaYf_gUa_Y]h^iniYf^Ub[Yb^zk^A\fYbX^5XX]gcb^D]YffY^AUU^ciZk^A\fYbX^Y]bYg^+DhYfj]Yk^ga^hYfj]Yk^ga^hYfj]Yk^ga^hYfjYbYa^;Ub[!5bZO\fYf^]b^c<U]h]YbhZO\fh^kifXY''^9VYbgc^Yf^YVhY^XYf^+D^ziYbW^f^6Yb^:f]Yf^Y]bY^5igbU\aYg]hiUh]cb^jb^5Z[\Ub]ghUb^bUWX^XYf^AUWX^WYfbU\aYXYf^HU^]VUb''$

 $8 \ Yf' 9] b \ Zi \ gg'j \ cb' Yl \ hf Ya \ Yb' + b \ U`h Yb'] b' \ X \ Yf' \ Yi \ h][\ Yb' 7 \ cbh Ybh!: `i \ h \ k] f \ X'j \ cb' \ G \ Uf \ U \ G \ X \ Yf' 5[\ Ybhi \ f'?] b[\ Zi \ Yb \ Wf$

\Yfj cf[Y\cVYb"'G]Y'Yf_`Àfhž'XUgg'gc`W\Y'\D\U`hY'a Y\f
5i Za Yf_gUa _Y]h'YfnYi [Ybž'k Ufbh'YXcW\ž'XUgg'j]Y`Y'X]YgYf
5\VYbhYi Yf'[i h']bgnYb]Yfh'cXYf'a Ub]di `]Yfh'g]bX'i bX'X]Y
G]W\Yf\Y]hgj cf_Y\fi b[Yb'cZh'j YfVcf[Yb'V'Y]VYb"'\D'5bVYhfUW\h
XYf'J]Y`nU\``bY[Uh]j Yf'9fZU\fi b[Yb'i bX'[YZ\\f`]W\Yf'5VYbhYi Yfž
gW\Y]bYb'j]Y`Y'Bi hnYf'ni 'XYf'UVgW\`]Y\YbXYb', VYf`Y[i b['ni
_ca a Yb. '9g'k \AfY'VYggYfž'X]Y'?cZZYf'ni '<Ui gY'ni '`UggYb"

8]Y'DfYggY'VYf]W\hYh'ØVYf'X]Y'U_hi Y``Yb'8]g_i gg]cbYb'ni f FY]gYVYfY]hgW\UZhž'k À\fYbX'&\$'A]bi hYb'X]Y'F]g]_Yb'i bX'HfYbXg VY]'\DZi YbWYf!FY]gYb'h\Ya Uh]g]Yfh"

8 Y hU]`g	
Cfh	Gh" DÒ`hY b ž ^{·2} ghY ffY]W\
EiY``Yb	k k k "X]YdfYggY"Wca
	• k k k "&\$a]b"W\

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. 'Y]bY!fY]gY "XY