

Df]bnYgg]b'5f]UbY'ZY]Yfh']\fYb GWXi`UVgWX`igg']b'=hU`]Yb'a]h']\fYb 9`hYfb°

? Ob]['K]``Ya !5`YI UbXYf'i bX'? Ob][]b'A 1/2]a U'fY]gYb'bUW\
#U`]Yb'ni f'5VgW\`i ggZY]Yf']\fYf'HcW\hYf'5f]UbY'Ua 'I K 7
5Xf]Uh]W'



8 i] b c ž = hU`] Y b !! 5 a '&- "'A U] '&\$ &) 'fY] ghY b '? Òb][] b 'A $\frac{1}{2}$] a U'i b X ? Òb]['K]``Ya !5`YI Ub XYf'j c b 'XYb 'B]Y XYf`Ub XYb 'b UW\ '\delta U`] Y b ž i a Ub 'Y] b Ya 'VY XYi hYb XYb ': Ua]`] Y b Y fY][b] g 'hY]`ni b Y \a Yb "'\delta fY \&b[ghY 'Hc W\ hYfž'Df] b n Y gg] b '5 f] Ub Y ž'\ Uh'] \fY 'G W\ i ``Ui ZV U\ b YfZc`[fY] W\ 'VYY b XYhž'] b XYa 'g] Y 'X] Y '\delta hYfb Uh] c b U``6 U W W `Ui fY UhY D f \alpha Z b[Yb 'UV[Y`Y[h`\ Uh'' 8] Y '5 V g W\ `i gg ZY] Y f 'Z Ub X 'Ua 'I b] hY X K c f` X '7 c ``Y[Y '5 X f] Uh] W gh Uhhž'Y] b Y f 'fY b ca a] Y f hY b 6]`Xi b [gY] b f] W\ hi b ['] a '? \alpha g hY b X c f Z'8 i] b c ž'Yh\ U`&\$ '?]`ca YhYf

Df]bnYgg]b'5f]UbYž'X]Y'g]W\']b'XYf'2 ZZYbh`]W_Y]h'Y\Yf'ni fØW_\À`h i bX']\fYb'GW\k YghYfb'XYb'J cfhf]hh'`Àgghž']gh'Yfgh'%, '\\\J\fY'U`h''6Y]XYf': Y]Yf'hfi ['g]Y'Y]b'Ui ZZÀ``][Yg'a U[YbhUZUfVYbYg'< Ya X'i bXY]bYb'Z']Y\"YbXYb'FcW_ž'k À\fYbX'?Òb][]b'A ½]a U'Y]b'Y`Y[UbhYggYbZ[Y`VYg'?`Y]X'a]h'k Y]\"Yb'6`i a Yb'i bX'?Òb]['K]``Ya!
5`YI UbXYf'Y]bYb'YfXZUfVYbYb'5bni ['k À\`hY'''8]Y'9f[YVb]ggY'j cb
5f]UbY g'DfØZ b[Yb'k YfXYb'5bZUb['*\]'Yfk UfhYh''

GWXi `k YWXgY``i bX`bYi Y`< YfUi gZcfXYfi b[Yb

 $8]Y `Df]bnYgg]b `\ Uh'ni j cf' XUg' 7 \ f]ghY`]^-; ma bUg]i a `Gcf[\ j `]Yh']b \\ 8 Yb' < UU[`VYgi W\ h'i b X'k]fX'bi b'] \ fY'ni _ØbZh][Yb `Ghi X]Yb `Ua \\ I K 7 `5 Xf]Uh]WZcfhgYhmYb''' 8]Yg']gh' XYf' Xf]hhY'Ni [Ub[`ni f GY_i b XUfgW\ i `Ui gV]`Xi b[`ZØf' X]Y'Hc W\ hYf' XYg'? Ob][gd UUfYg'i b X g]Y']gh' X]Y'`YhnhY' XYf' XfY]' GW\ k YghYfbž' X]Y'X]Y'GY_i b XUfgW\ i `Y VYgi W\ h'' 5f]UbY'_ObbhY' bUW\ ']\ fYa `5 VgW\ `i gg']a `5 i g`Ub X ghi X]YfYbž' k Ug'bc W\ i b VYgh\ h][h']gh'' \Rightarrow fY' \A`hYfY' GW\ k YghYf\ ZDf]bnYgg]b '7 Uh\ Uf]bU! 5a U`]U\ Z'ghi X]Yfh' VYfY]hg' Ub' XYf' I b]j Yfg]h\ h]b' 5a ghYfXUa \ \Z'k \A\ fYb X'Df]bnYgg]b' 5 `YI]U'bUW\ 'XYa `5 VgW\`i gg XYg'\ hYfbUh]cbU`' 6 UWWU`Ui fYUhY'Y]bY' 5i gnY]h'[Ybca a Yb'\ Uh''$

8 Yf '6 Ygi W 'j cb '? Ob]['K]``Ya !5`YI Ub XYf 'i b X '? Ob][]b 'A 1/3]a U 'ni X]YgYa 'VYXYi hYb XYb '5 b` Ugg 'i bhYfghfY]W h'X]Y '6 YXYi hi b['j cb 6]`Xi b[']b 'XYf '_Ob][`]W Yb : Ua]`]Y "8 Yf '? Ob]['gY`Vgh`\ Uh Y]b Y Zi bX]YfhY '6 Yn]Y\i b['ni f'I K 7!6 Yk Y[i b[ž'XU 'Yf 'Y]b 'Y\Ya U`][Yf GW Ø`Yf 'XYg 'I K 7 '5 h` Ubh]W7c``Y[Y ']b 'K U`Yg ']gh" '8 Ug 'I K 7! BYhnk Yf_'i a ZUggh'k Y`hk Y]h'%, 'GW i `YbžX]Y 'g]W 'Ui Z'X]Y '`YhnhYb nk Y] '\\J\fY 'XYf 'GY_i b XUfgW i `Ui gV]`Xi b['_cbnYbhf]YfYb 'i b X 'XUg \\D\fYfb Uh]cbU``6 UWW U`Ui fYUhY 'UbV]YhYb"

8]Y'9]bgWkfY]Vib['Ua'l K7'5Xf]Uh]W]gh'a]h'Yf\YV`]WkYb'?cghYbjYfVibXYbž'X]Y'g]Wk'UiZ'YhkU'(*"\$\$\$'9ifc'ZØf'nkY]'\\\fY VY`UiZYb"'8]Y'\c\Y'BUWkZfU[Y'ibX'X]Y'5igkU\`jYfZU\fYb'ghY``Ybg]WkYfž'XUgg'bif'X]Y'VYghYb'GWkØ`Yf'UiZ[YbcaaYb'kYfXYbžkYg\U`V'X]Y'GWki`Y'U`g'_i`hifY``Yf'HfYZZdib_hibX'VYXYihYbXYf6]`Xib[ghfÀ[Yf'[]`h"':fØ\Yf'\UhhY'?Òb][]b'A1/3]aU'VYfY]hg $\begin{tabular}{ll} Ub`\grave{A}gg`]W\&`XYf`5a hgY]bZØ\&fi b[`jcb`DUdgh'@Yc`L=J"`=hU`]Yb \\ VYgi W\&hž'k Ug`X]Y`h]YZYb`JYfV]bXi b[Yb`XYf'_<math>\grave{O}$ b][`]W\&Yb`: Ua]`]Y`ni X]YgYa `@UbX`jYfXYi h`]W&h"

8]Y'9bhk]W_`i b[Yb'fi bX'i a 'XUg'?Òb][g\Ui g'i bX'X]Y
6]`Xi b[gk Y[Y'XYf'Df]bnYgg]bbYb'nY][Ybž'k]Y'k]Wkh]['6]`Xi b['i bX'dYfgÒb`]WkY'9bhk]W_`i b['ZØf'X]Y'bÀWkghYb'; YbYfUh]cbYb'XYf
FcmU`g'g]bX"'5fmUbY g'bÀWkghY'GWkf]hhY'V`Y]VYb'gdUbbYbX
UVni k UfhYbž'k À\fYbX'g]Y'g]Wk'Ui Z'Y]bYb'bYi Yb'@YVYbgUVgWkb]hh
j cfVYfY]hYh"

 $A \ Y \ f' \emptyset V Y f' X] Y' F Y] g Y' X Y f' _ \mathring{O}b][`] W Y b' : Ua \]`] Y' i b X' X] Y' g W i `] g W Y b : c f h g W X f] h h Y' j c b' D f] b n Y g g] b' 5 f] Ub Y' Y f Z U \ f Y b' G] Y' V Y]'$ **c d! c b`] b Y'' X Y** $g c k] Y' V Y]' \] g h c] f Y g f c m U ` Y g'' Z f''$

8 YhU]`g	
Cfh	8i]bcž [·] ≠N`]Yb
EiY``Yb	k k k "cd!cb`]bY"XY
	\]ghc]fYgfcmU`Yg"Zf

6Ygi WXYb G]Y i bg Ui Z Y]bY!fY]gY "XY