

<]Yfg]bXXJYHcd) XYf? = 7c]bg



 $8] Y ? fmd hck Å fi b [gVfUbWk Y] gh'VY_Ubbh'ZØf'] \ fY YI d`cg] j Yb HfYb X gž'VY] `XYbYb'Y] b Y ; fi dd Y 'j cb'Dfc Y_hYb'] b `XYb' <] a a Y`Ui ZghY] [h'i b X `XYb' F Ygh' X Y g' A Uf_hYg' X Yi h`] Wk' ØV Y fhf] ZZh''$

9]b][Y'XUj cb'[UV'Yg'VYfY]hg']a '\\\f'&\\$\' \z'\UVYf'Y]bYfz'\XYf Ui ZZÀ``hz'g\XY]bh'Y]b'HfYbX']a 'Ni gUa a Yb\Ub['a]h'Dfc'Y_hYb'ni gY]bžX]Y'Ub'@Ògi b[Yb'Ui ZXYf'; fi bX`U[Y'_Øbgh`]W\Yf'+bhY``][Ybn [YUfVY]hYh'\UVYb"

9]b'[YbUiYfYf'6`]W_'UiZ'? \\VYnc[YbY'?fmdhc!DfcY_hY'nY][h\\\XUgg j]Y`Y'jcb']\bYb'XYb'FYgh'XYf'6fUbW\Y'XYih`]W\'ØVYfhfcZZYb'ibX]\fYb'K Yfh'ia 'Y]bYb'VYhfÀW\h`]W\Yb': U_hcf'jYfj]Y`ZUW\h'\UVYb"

=a :: c`[YbXYb'k]fX'bÀ\Yf'XUfUi Z'Y]b[Y[Ub[Ybž'kUfi a 'X]Yg [YgW\U\ž'kUg'Yg'dfcj cn]YfhY'i bX'kY'W\Y'XYf'VY_UbbhYghYb ?fmdhc!Dfc'Y_hY'XUa]h'j YfVi bXYb'q]bX"

HUi WXYb k]f Y]b"

GWXbY``YBUj][Uh]cb

K Ugʻ]ghʻ? Øbgh`]W $XY = bhY``][Ybn`fl? \pm 3$

9fghYbgʻ]ghʻ_Øbgh`]W\Yʻ±bhY``][Ybnʻ_Y]bʻbYi YgʻD\Àbca Ybʻ]bʻXYf K Y`hʻXYfʻHYW\bc`c[]Y"'9gʻ]ghʻUi W\k]W\h][ini 'VYUW\hYbžʻXUggʻYg _Y]bYbʻ?cbgYbgʻØVYfʻX]Yʻ8YZ]b]h]cbʻj cbʻ?=[]Vhžk UgʻYgʻgW\k]Yf][a UW\hž'Y]bYbʻY]bgY]h][Ybʻ5bk YbXi b[gZU``ni 'VYgh]a a Yb"

J]Y`Y`\U`hYb`?=ZØf`Y]bY`VYgcbXYfg`_f]h]gW\Y`HYW\bc`c[]Y`a]h hfUbgZcfaUh]jYb`9][YbgW\UZhYb`ibX`XYa`DchYbn]U`ž`ibgYfY ;YgY``gW\UZh`ni`jYfÀbXYfb"

@U]Yb\UZh'Ui g[YXfØW_h']gh'_Øbgh`]W\Y'=bhY``][Ybn'X]Y'G]a i `Uh]cb a YbgW\`]W\Yf'=bhY``][YbndfcnYggY'Xi fW\'7ca di hYfgmghYa Y'cXYf UbXYfY'5fhYb'j cb'A UgW\]bYb"'9g'[]Vh'a Y\fYfY'5bk YbXi b[Ybž XUfi bhYf'9l dYfhYbgmghYa Yž'a UgW\]bY``Yg'GY\Ybž'a UgW\]bY``Yg @YfbYbž'GdfUW\Yf_Ybbi b[ž'JYfUfVY]hi b['bUhØf`]W\Yf'GdfUW\Y'i bX gc'k Y]hYf"

Hmd]gWXYfkY]gY'UfVY]hYb'? #GmghYa Y'Ui Z'XYf'U_hi Y``Yb'9VYbY']b

XYf'FY[Y``gcž'XUgg'g]Y'f]Yg][Y'AYb[Yb'[Y_YbbnY]WXbYhYf

HfU]b]b[g]bZcfa Uh]cbYb'Ui ZbY\a Ybž'X]YgY'8UhYb'Ui Z'AighYf'i bX

VYgh]a a hY'?cffY`Uh]cbYb'UbU`mg]YfYb'i bX'X]YgY'AighYf'XUbb
j YfkYbXYbžia 'VYgh]a a hY'Jcf\YfgU[Yb'i bX'GWX`i ggZc`[Yfi b[Yb

Gc Zi b_h]cb]Yfh Ui W Y]bY XYf dcdi `ÀfYfYb ? ±5bk YbXi b[Yb 'bÀa `]W 7\Uh DH XYf CdYb5 ±7\UhVchž XYf _Øfn`]W X]Y K Y`h]a Ghi fa 'YfcVYfh'\Uh"

8]Y 7\Uh; DH!A Ub]Y

5``Y`gdfUW\Yb`ØVYf`7\Uh; DH"`5i »YfXYa `fYXYhYb`U``Y`*Ni* `7\Uh; DH"`5`gcž'k Ug`]gh'Yg3

CdYb5=\UhiY]b 7\UhVch!AcXY``hfU]b]YfhžiXUg XUfUi Z'Ui g[Y`Y[h]ghžia]hiXYa 6Ybi hnYfi]a 8]U`c[ini i]bhYfU[]YfYb"8Ug 8]U`c[Zcfa UhigY`Vghia UWXhiYg 7\Uh; DHia Ò[`]WX ii bXin]Ya`]WX Y]bZUWX žij YfgWX]YXYbY 5bgWX`i ggZfU[Ybini VYUbhk cfhYb"G]Y [YghY\higc[Ufi]\fY': Y\`YfiY]bžighY``hiZU`gWXY'DfÀa]ggYbi]bi: fU[YibX``Y\bhi5bhfÀ[Y'UVžiX]Y'U`gii bUb[YaYggYbiYfUWXhYhik YfXYbfY]biGhfY]hdib_hiZØfij]Y`YŁ"

5VYf'k Ufi a 'b]W\h'bUW\g]W\gY`Vgh'ZfU[Yb3

7\Uh; DH

8]Yg'k Ufž'U`g'X]Y'8]b[Y'VY[UbbYbž'Ui Z[Y\Y]nh'ni 'k YfXYb"

HYWX!;][UbhYb [YVYb j]Y`; Y`X Ui g

? fmd hc hfY b X g 'k Y f X Y b 'c Zh 'X i fW\ 'À i \Rightarrow Y f Y '9 f Y][b] ggY '__UhU `mg] Y fh'' = b X] Y g Y a 'gd Y n] Y ``Y b ': U ```k U f Y b 'Y g '7 \ Uh; DH 'i b X 'Ub X Y f Y '? = ! V Ug] Y fh Y A c X Y ``Y ž 'X] Y 'i b h Y f '[f \overline{O}\times Y f Y b 'B Ua Y b 'Ub': U\ fh' [Y k Ub b Y b '' 9] b Y f j c b ']\ b Y b 'k U f 'X Y f 'H Y W\ ! A c [i ``A] W f c g c Zh''

5a '&' "'*Jbi Uf'*&\$&' 'VYf]W\hYhY'6`cca VYf[ž'XUgg'A]WfcgcZhigUhhY

%\$ 'A]``]UfXYb'I G!8c``Uf']b'CdYb5=`]bj Ygh]Yfh'\Uh' 'XYb'< YfghY``Yf j cb'7\Uh; DH"'9g']gh'Yfk À\bYbgk Yfhž'XUgg'A]WfcgcZh'ni 'X]YgYa NY]hdi b_h'VYfY]hg'Y]b'I bhYfghØhnYf'j cb'CdYb5='k Uf'i bX'VYfY]hg &\$%- '%'A]``]UfXY'I G!8c``Uf']bj Ygh]Yfh'\UhhY"

CdYb5=[UV'Ui WX'VY_Ubbhž'XUgg'Yg'XYb'7`ci X!VUg]YfhYb'8]Ybgh j cb'A]WfcgcZh'bUa Ybg'5ni fY'j Yfk YbXYhž'i a 'U``Y'gY]bY'A cXY``Y ni 'hfU]b]YfYb"'9]bYf'XYf'<Ui dhnk YW_Y'XYf'=bj Ygh]h]cb'VYghUbX XUf]bž'XYa 'I bhYfbY\a Yb'X]Y'A Ò[`]WX_Y]h'ni '[YVYbž'gY]bY i bUV\Àb[][Y': cfgWXi b['j cfUbni hfY]VYb"

8 Yf'? fmd hc!HfYbX

9gʻ]ghʻgWkYfžʻXYbʻ[YbUiYbʻNY]hdib_hʻni 'VYgh]a a YbžʻUbʻXYa XYfʻ? #HfYbXʻUiZʻXYa '?fmdhckÀ\fib[ga Uf_hʻVY[UbbžʻUVYfʻYg kUfʻib[YZÀ\f'ni 'X]YqYfʻNY]h"

J]Y`Y`?fmdhck À\fi b[Ybž'X]Y`Yhk Ugʻa]h`_Øbgh`]W\Yf`±bhY``][Ybn`ni hi b`\UhhYbž'VY[UbbYb`Ub`K Yfh'ni `[Yk]bbYb"

K]Y 'Yg 'ZUgh']a a Yf 'XYf': U```]ghž 'VYXYi hYhY 'X]Yg 'Ui W\ ž 'XUgg Dfc 'Y_hY ž 'X]Y 'n]Ya `]W\ 'nk]Y`]W\ h]['k UfYb ž 'UVYf 'bi f' ? =']a 'B Ua Yb \UhhYb ž 'ni 'di a dYb 'VY[UbbYb"

 $\label{local-condition} I \ b X \ c V k \ c \ `Yg'j] Y \ Y \ Y \ b \ g h \ UZhY \ Dfc \ Y \ h Y \ a \] h \ V Y \ h \ A \ W \ Y \ h \ Y \ f \ h \ Y \ f \ b \ Y \ g \ A \ b \ Y \ g \ A \ b \ Y \ g \ A \ b \ Y \ f \ A \ Y \ f''$

 $\begin{array}{l} K \ YfZYb \ k \]f \ b \ b \ Y \]b \ Yb \ '6 \]W \ 'Ui \ Z'Y \]b \][\ Y \ XYf \ VY \]YVh \ gh Yb \ '? \ \\ ?fmd \ hc \ k \ A \ fi \ b \ [\ Yb \ XU \ XfUi \ \ \ \ Yb \ '' \end{array}$

Hcd') ? ∃? fmd hck À\fib[Yb

8Yf; fUd\fl, FHŁ

 $H\Y'; fUd\']gh'Y]b' + X]n]Yfi b[gdfchc_c``ž'XUg'gdYn]Y```ZØf'X]Y 5 VZfU[Y'j cb'BYhnk Yf_Yb'k]Y'9h\YfYi a 'i bX'+D: G'Ybhk]W_Y`h k i fXY"$

A]h'UbXYfYb'K cfhYbž'DfcY_hY'a]h'_ca d`]n]YfhYb'Ga Ufh'7cbhfUWhg fk]Y'n'I b]gk Ud'i bX'gc[Uf'X]Y'GUa a `i b['6cfYX'5dY'MUW\h'7`i V B: HŁ'gdY]W\Yfb'\d=\Zcfa Uh]cbYb']a 'BYhnk Yf_'j cb'9h\YfYi a "'8]Yg a UW\h'Yg'gY\f'gW\k]Yf][ž'Yhk Ug'UbXYfYg'U`g'X]Y'[fi bX`Y[YbXYb 8UhYb'X]fY_h'Ui g'XYf'6`cW_W\U]b'ni '`YgYb"

C\bY'ni 'k Y]h']b'X]Y'hYWXb]gWXYb'8YhU]`g'ni '[Y\Yb'fK]Y'G]Y'\]Yf Z]bXYb'_ObbYbŁž'`Ogh'H\Y'; fUd\'X]Y'?ca d`YI]hÀh'Xi fWX'Y]b XYnYbhfU`]g]YfhYg'Dfchc_c``ž'XUg'XUfUi Z'Ui g[Y`Y[h']ghž'X]Y BYhnk Yf_XUhYb'ni ']bX]n]YfYb'i bX'X]Y'@Y]ghi b['Y]bYf'YZZ]n]YbhYb 5VZfU[Y'ni 'Yfa O[`]WXYb"

J]Y`Y`6Yf]W\hY`VY\UidhYbžXUgg`H\Y`; fUd\`_Øbgh`]W\Y`±bhY``][YbnjYfk YbXYhžia `gc`n]Ya`]W\`XUg`ni`hibžk Ug`; cc[`Y`ZØf`XUg±bhYfbYh`[YhUb`\Uh"

 $GY]bY'bUh]jY'?fmdhck Å\fi b['hfÅ[h'XYb'; FH!H]W\underline{Yf'i} bX']gh'gY]h \\ 5bZUb['&$\&' 'Y|d`cX]Yfh''$

G]b[i Uf]hmBYh'fl5; = L Ł

 $G]b[i`Uf]hmBYhi]gh'Y\Yf'Y]b^2_cgmghYa`U`g'Y]b'Yb[`Zc_i~gg]YfhYg? fmdhcdfcY_hž'UVYf'Yg'\Uh'_Øbgh`]WXY' <math>\Rightarrow hY``][Ybn']a~?Yfb''$

 $8\,]Y\,?\,Yfb\,Ui\,Z[\,\,UVY\,.XYg\,.HY\,Ua\,\,g\,.VY\,ghY\,\backslash\,h\,.\Upsilon\,Xc\,W,\,.X\,Uf\,]b\,z\,.Y\,]b\,Y\,.\,\,\,5\,fh]Z]W]U\,.$

; $YbYfU^*=bhY^*][YbW'fb; & ZØfY]bY'bØhn']WXY'hYWXbc'c[]gWXYG]b[i`Uf]hAh'ni 'gWXUZZYb"$

9gʻ]ghʻUi WkʻYfk À\bYbgk YfhžʻXUggʻX]YʻD`UhhZcfa 'Ui Zʻnk Y]]bhY``][YbhYbʻJYfhfU[gbYhnk Yf_YbʻVUg]Yfh' '9h\YfYi a 'i bX 7UfXUbc"

: YhWX "U] fl 9HŁ

: YhWXU]=ghY``h'Y]bY'6`cW_WXU]b!D`UhhZcfa 'j cfž'X]Y'_Øbgh`]WXY ±bhY``][Ybn'bi hnhži a 'A YbgWXYb'VY]'XYf'5i hca Uh]g]Yfi b[U``hÀ[`]WXYf'5i Z[UVYb'ni 'i bhYfghØhnYb"

8 UgʻN]Y``j cbʻ: YhWX "U]ʻ]ghʻYgžʻY]bʻj c``ghÀbX][`cZZYbYgʻi bX Yf`Ui Vb]gZfY]YgʻBYhnk Yf_`ni `k YfXYbžʻXUgʻ? =bi hnhži a `Y]b XYnYbhfU`YgʻGmghYa `ni `gWXUZZYbžʻXUgʻa UgWX]bY``Ygʻ@YfbYb j Yfk YbXYhži a `5i Z[UVYbʻUi ZʻXYfʻ6`cW_WXU]bʻUi gni ZØ\fYb"

9g']gh'Y]b' +bhYfW\U]b!Dfchc_c```i bX'bi hnh']a 'K YgYbh`]W\Yb'X]Y
?fUZh'XYf'_Øbgh`]W\Yb' +bhY``][Ybnži a 'Ui hca Uh]g]YfhY'D&D!
5bk YbXi b[Yb'c\bY'a YbgW\`]W\Yg'9]b[fY]ZYb'ni ']a d`Ya Ybh]YfYb''
9g'k i fXY'VYfY]hg']a ': YVfi Uf'&\$%- 'Xi fW\'Y]b' +b]h]U`'9I W\Ub[Y
C ZZYf]b['fH>C Ł'Ui Z'XYa '6]bUbW' @Ui bW\dUX'Y]b[YZØ\fh''

8 Ugʻ[YgUa hYʻ² _cgmghYa ʻk]fXʻXi fWXʻXYbʻbUh]j YbʻHc_YbʻbUa Ybg : 9Hʻi bhYfa Ui Yfh"·5`gʻX][]hU`YʻK À\fi b[ˈdcg]h]cb]Yfhžʻ]ghʻ: 9HʻXUg df]a ÀfYʻHUi gWXa]hhY`ʻ]bbYf\U`VʻXYgʻ² _cgmghYa g"ʻK YbbʻG]Y Y]bYbʻXYfʻ_cghYbdZ]WXh][Ybʻ8]YbghYʻj cbʻ: YhWX "U]ʻbi hnYb a ÒWXhYbžʻa ØgqYbʻG]Yʻa]hʻ: 9HʻVYnU\`Yb"

$CUgYbbYhnkYf_fFCG9L$

8 Ug C Ug]g!BYhnk Yf_']gh'Y]bY'@UmYf!%!6`cW_WXU]bž'X]Y'j]Y`gY]h][ž Ui Z'Y]bn][Ufh][Y'K Y]gY'g_U`]YfVUf'i bX'Ui WX'XUhYbgWXi hncf]Ybh]Yfh]gh" $C \bY'Ui Z'ni'j]Y`Y'hYWXb]gWXY'8YhU]`g'Y]bni [Y\Ybž'i a ZUggh'XYf HYWXbc`c[]Y!GhUW_'X]Y'Zc`[YbXYb'<][\`][\hg.$

- 8]Y'?cbgYbggWk]Wkhii bX'X]Y'5i gZØ\fi b[ggWk]Wkhig]bX
 [YhfYbbh"'8UXi fWk'_ObbYb'a Y\fYfY'DUfUH]a Yg
 ['Y]WknY]h]['HfUbgU_h]cbYb'j YfUfVY]hYb"
- 8]Y'DUfUH]a Y!GWX]WXh']gh'j c``ghÀbX]['XYnYbhfU`]g]Yfh" 8Ua]h'_Ubb''YXYf'gY]bY'[Ubn'Y][YbY'DUfUH]a Y'VUi Yb"
- C Ug]g'B Y hk cf_']gh'gc'Ui Z[Y V Ui hž'X Ugg'Yg'Y ZZ]n]Y b hY f']gh'U'g DUfUW U]bg'i b X'G \ UfX]b['''X Ug']gh'X Y f'5 b gd fi W "

8]Y 'DUfUH]a Y!GW\]W\h']gh']\fY '5fhž'X]Y '5i g \mathbb{Z} V\fi b[ggW\]W\h'ni VYbYbbYb"

8]Y bUh]j Y ?? fmd hc k À\fi b[']gh'F C G9"'Ÿ\b`]W\ 'k]Y 'X]Y 'a Y]ghYb'? \pm cf]Y bh]Y fhYb 'Dfc Υ _hY 'j YfnY]W\ bYhY 'Yg'5 bZUb['&\$&' 'Y]b Yf\YV`]W\ Yg'K UW\ ghi a "

8 UgʻHYUa ʻj YfÒZZYbh`]W\hYʻY]bYbʻcZZ]n]Y``Ybʻ6`c[!6Y]hfU[žXUggʻYg j YfUbhk cfhi b[gVYk i gghYʻ? \delta Df]a]h]j Y ʻVUi hʻi bXʻXUggʻYgʻa]h 6fUbW\YbZØ\fYfbʻUi gʻa Y\fYfYbʻGY_hcfYbʻni gUa a YbUfVY]hYhž i a ʻfcVi ghYʻDf]a]h]j YʻZØfʻj YfUbhk cfhi b[gj c``Yʻ? \delta ni ʻYbhk YfZYb i bX'ni ʻ]a d`Ya Ybh]YfYb "

CnYUbdfchc_c``fC795BŁ

Ni '[ihYf'@Yhnh'ghY\h'UiZ'ibgYfYf'@]ghY'XUg'CWYUb'DfchcWc`"'8]Yg]gh'Y]bY'D`UhhZcfaž'X]Y'Ybhk]W_Y`h'kifXYž'ia'8UhYbUbV]YhYf'ibX8UhYb_cbgiaYbhYb']b'Y]bYa'6`cW_WXU]b!VUg]YfhYb'AUf_hd`Uhn'nijYfV]bXYb"

GY]b'AcxY```ghØhnh'g]W\`UiZaY\fYfY'\bcjUh]cbYbž'XUfibhYf'? = ibX'X]Y'Hc_Yb]g]Yfib['VYgh]aahYf'8UhYbgÀhnY'ibX8UhYbX]YbghYž'XUa]h'5bV]YhYf']\fY'8UhYb'gW\bY``ž'Y]bZUW\'ibXYZZY_h]j'acbYhUf]g]YfYb'_ObbYb"'5bXYfYfgY]hg'\UVYb'JYfVfUiW\YfVYeiYaYb'Ni[Ub['ni'Y]bYa'2_cgmghYa'bØhn`]W\Yf\bZcfaUh]cbYb"

8]Y'?fmdhck À\fi b[ž'X]Y'XUg'² _cgmghYa 'UbhfY]Vhž'\Y]» h'C 795B"

· • n

8 Y hU]`c

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. '_fmd hc!bYk g"Uh