

A Ubb 'fUghYh'Ui g. 'GYWX g'Dc`]n]ghYb ']b : ØfghYbZY`XVfi W_ 'j Yf`Yhnh'

9]b'' %! λ f][Yf'[f]ZZ']b': ØfghYbZY`XVfi W_'Dc`]n]ghYb'Ubž bUWXXYa 'Yf']b'Y]bYf'; Ughgh λ hhY'?]bXYf'VYXfc\hY"'GYWXg 6YUa hY'k i fXYb'j Yf`Yhnh"



: ØfghY b ZY`X V fi W_ \dot{z} '8 Yi hgWk `Ub X '! $\cdot \pm$ 0 :: ØfghY b ZY`X V fi W_ '_ Ua 'Yg Ua '8]Y bghU[UVY b X 'ni 'Y]b Ya 'J c f ZU`` \dot{z} XY f 'X]Y' < Y f Ui g Zc f XY fi b [Yb XY f 'Dc`]nY]']a 'I a [Ub ['a]h 'd g m Wk]g Wk 'Ui ZZÀ``][Yb 'DY f g c b Y b Ui ZnY][h" '9]b'' %! \dot{A} \ f][Yf \dot{z} XY f 'VY f Y]hg' d c`]nY]V Y_ Ub b h']gh'i b X 'Ui g XYa '@Ub X_ f Y]g' I b h Y f U``[Ài 'ghUa a h \dot{z} Y g_U`]Y f h Y']b' XY f'; Ughgh A h Y ?`c g h Y f h Ø V Y f \dot{z} 'U`g' Y f 'c \ b Y 'Y f g] Wk h`] Wk Y b'; fi b X 'nk Y]'?]b XY f']a 5 `h Y f' j c b' ZØb Z'i b X'g] Y V Y b' \dot{z} \ \f Y b' Ub g Wk f] Y'i b X' X U V Y]' 8 f c \ i b [Y b Ai \ Y f h Y'' 8] Y' A i h h Y f X Y f '?]b X Y f 'f Y U[] Y f h Y' g Wk b Y `` i b X j Y f g h Ab X][h Y' X Y b' B c h fi Z k \ A \ f Y b X' X Y f' A Ub b' Z Ø Wk h Y h Y'' \dot{z} \ X Y f 'C \ C`[Y '[Y` Ub ['Y g' X Y f' D c`]n Y] \dot{z} X Y b' J Y f X A Wk h][Y b' k Y b]['g d A h Y f'] b X Y f' G Wk Ob [Y] g] b [Y f' G h f U \ Y Y' Ui g Z] b X]['ni 'a UW X Y b'''

8]Y 6YUa hYb ZcfXYfhYb J YfghÀf_i b[ž'U`g'XYf'A Ubb Ui Z']\fY

5bgdfUWXY'b]WX h'fYU[]YfhY"'9]b'UbgWX`]Y» YbXYf'J Yfgi WXž']\b
Ubni\U`hYbž'UfhYhY']b'; Yk U`h'Ui gž'U`g'Yf'a Y\fa U`g'Ui Z'X]Y
Dc`]n]ghYb'Y]bdfØ[Y`hY"'Hfchn'XYg'9]bgUhnYg'j cb'DZYZZYfgdfUm'i bX
GWX`U[ghÒW_Yb'V`]YV'X]Y'G]hi Uh]cb'Ub[YgdUbbhž'i bX'`Yhnh`]WX
k i fXYb'gYWXg'6YUa hY'`Y]WXh'j Yf`Yhnhž'_cbbhYb'YXcWX']\fYb
8]Ybgh'ZcfhgYhnYb"'8Yf'A Ubb'k i fXY']b'Y]bYb'dgmWX]gWXYb
5i gbU\a Yni ghUbX'j YfgYhnh'i bX']b'Y]bY: UWX_`]b]_'[YVfUWXh"'9f
g]Y\h'g]WX'bi b'[`Y]WX'a Y\fYfYb'5bnY][Yb'k Y[Yb'6YXfc\i b[ž
hÀh`]WXYb'5b[f]ZZg'Ui Z'Jc``ghfYW_i b[gVYUa hYž'K]XYfghUbXg'i bX
? ÒfdYfj Yf`Yhni b['[Y[YbØVYfž'VYf]WXhYh'X]Y'GØXXYi hgWXY
NY]hi b["

DgmWX]gWXY'5i gbU\a Yg]hi Uh]cbYb'i bX'XYfYb : c`[Yb

8 Yf J cf Zu``]b : ØfghY b ZY`XVfi W_j YfXYi h`]WX h'X]Y 'Vf]gUbhY H\Ya Uh]_žk]Y 'Dc`]n]ghYb]b '8 Yi hgWX`UbX 'a]h'A YbgWX Yb]b dgmWX]gWX Yb '? f]gYb ii a [Y\Yb" @Ui h'Y]bYa '6 Yf]WX h'XYf 'HU[YggWX Ui 'k i fXYb]b 'XYb '`YhnhYb '*J\fYb]b '8 Yi hgWX`UbX'' + A YbgWX Yb]b 'dgmWX]gWX Yb '? f]gYb j cb 'XYf 'Dc`]nY] 'YfgWX cggYb" '8 Yf I a [Ub['a]h'gc`WX Yb 'G]hi Uh]cbYb ']gh'\Ài Z]['b]WX h'Ui gfY]WX YbX [YfY[Y`h" '9I dYfhY 'VYf]WX hYb j cb 'Y]bYa 'Ub\U`hYbXYb 'A Ub[Y``Ub ; Y`X ii bX 'DYfgcbU`žk Ug'X]Y 'bchk YbX][Y '5i gV]`Xi b['XYf '6YUa hYb ni f'6Yk À`h][i b['X]YgYf`\Y]_`Yb 'G]hi Uh]cbYb 'YfgWX k Yfh"

a :: U```j cb 'C]g£b ž'XYf'j cf'Y]b][Yb '≯J\fYb ']b '< Ua Vi f['YfgWk cggYb k i fXYž'nY][Yb 'g]Wk '[fUj]YfYbXY '8 YZ]n]hY. '9f'k Uf'Zf]gWk [YVUW_YbYf'J UhYfž'nY][hY 'dgmWk ch]gWk Y 'Gma dhca Y'i bX'j Yf\]Y`h g]Wk 'a Yf_k ØfX][ž'k Ug``Yhnh`]Wk ']b 'Y]bYf'XfUa Uh]gWk Yb '?cbZfcbhUh]cb 'a]h'XYf'Dc`]nY] 'a ØbXYhY'''<]YfVY]'_cbbhYb'X]Y 6YUa hYb'b]Wk h'UXÀei Uh'Ui Z'X]Y '@U[Y'fYU[]YfYbž'k Ug'ni 'Y]bYa hÒX`]Wk Yb '5i g[Ub['ZØ\fhY'''9g'_fUb_h'Ub'XYf'ghfUhY[]gWk Yb : cfhV]`Xi b['XYf'Dc`]nY]ž'X]Y'j cf'U``Ya ']b'bi f'XfY]'6i bXYg`ÀbXYfb j YfdZ]Wk hYbX']gh''5i Wk 'k Ybb'g]Wk 'Y]b][Y'Dc`]nY][YV]YhY'VYa Ø\Ybž A U» bU\a Yb'ni f'VYggYfYb'J cfVYfY]hi b['ni 'Yf[fY]ZYbž'V`Y]Vh'XYf K Y['V]g'ni 'Y]bYf'ZÀWk YbXYW_YbXYb'@Ògi b['ghY]b]["

 $8\,]Y\,^9\text{`hYfb''}j\,\,cb''C\,]g\rlap/\&b''\setminus UVYb'']bnk\,\,]gW\!XYb''?\,`U[\,\,Y''j\,\,cf'\,XYa$

9i fcdÀ]gWXYb; Yf]WXhg\cZ:ZØf`A YbgWXYbfYWXhY`Y]b[YfY]WXhž`XUg]Y`a]h`XYf`9]bghY``i b[gYbhgWXY]Xi b[`XYg`9fa]hh`i b[gj YfZU\fYbg b]WXh`Y]bj YfghUbXYb`g]bX"`G]Y`\cZZYbž`XUgg`]\f`: U```j cf'; Yf]WXh Y]bY`[fi bX`Y[YbXY`BYi VYk Yfhi b[`gc`WXYf`JcfZÀ``Y`VYk]f_Yb_Ubbž`i a `]b`Ni _i bZh`Y]bY`Y]b\Y]h`]WXY`i bX`YZZY_h]j Y`<UbX\UVi b[]b`8Yi hgWX`UbX`ni `YhUV`]YfYb"

 $: \varnothing f'X]Y'Dc`]nY]']b': \varnothing fghYbZY`XVfi W_'k Uf'XYf'JcfZU``Y]b\\ Y]bXf\varnothing W_`]WXYg'6Y]gd]Y``Z\varnothing f'X]Y'< YfUi gZcfXYfi b[Ybž'X]Y'gY]hYbg XYf'; YgY``gWXUZh'Ui Z'g]Y'ni _ca a Yb'''8]Y'dfÀj Ybh]j Yb A U» bU\a Yb'i bX'hfU[ZÀ\][Yb'@Ògi b[Yb'ZØf'Y]bY'g]WXYfY 6Yk À`h][i b['gc`WXYf'9]bgÀhnY'g]bX'b]WXh'bi f'bÒh][ž'gcbXYfb XfÀb[YbX'''9]b'[i hYg'<ÅbXWXYb'i bX'X]Y'f]WXh][Yb : cfhV]`Xi b[gUb[YVchY'_ObbYb'\]Yf'YbhgWXY]XYbX'gY]b''$

8 YhU]`g	
Cfh	: ØfghYbZY`XVfiW_ž'8YihgW\`UbX
EiY``Yb	• kkk"giYXXYihgW\Y"XY
	• kkk"hU[YggWXUi"XY

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