

8 Yi hgWX Y '6 U\ b 'ghfY]WX h'=7! J YfV]b Xi b[Yb. '9]b 'GWX`U['ZØf'H\ Øf]b[Yb'

8]Y'8Yi hgWXY'6U\b'd`Ubh'UV'&\$&*'?Øfni b[Yb'VY] :YfbjYfV]bXi b[Yb']b'\ybU'i bX'H\Øf]b[Ybž'k Ug 5i gk]f_i b[Yb'Ui Z'DYbX`Yf'i bX'FY]gYb'\Uh"



>YbUž8Yi hgWX`UbX`!'8]Y`bYi YghY`5b_ØbX][i b[`XYf`8Yi hgWXYb
6U\b'a UWXh'@i Zh']b`XYb`NØ[Yb'i bX`gcf[h`ZØf`5i ZfY[i b[']b
H\Øf]b[Yb"`5V`&\$&*`d`Ubh`XUg`I bhYfbY\a Ybž'Y]b][Y`±bhYfW]hm!
JYfV]bXi b[Yb'ni 'ghfY]WXYb"`8]Yg`k i fXY`VY]a '__Øfn`]WX
UV[Y\U`hYbYb` 6U\b[]dZY` ']b`≯bU'j Yf_ØbXYh"'Jcf`U``Ya 'XYf
CghYb`H\Øf]b[Ybg'_ÒbbhY'j cb`XYb`ŸbXYfi b[Yb`VYhfcZZYb`gY]bž
X]Y`b]WXh'bi f`DYbX`Yfž'gcbXYfb`Ui WX`FY]gYbXY`ghUf_
VYY]bhfÀWXh][Yb`_ÒbbhYbž'k]Y`A 8F`VYf]WXhYh"

Ni 'XYb'[Yd`UbhYb'ŸbXYfi b[Yb'[Y\Òfh'X]Y'FYXi n]Yfi b['XYf'NØ[Y Ui Z'XYf'GhfYW_Y'j cb'@Y]dn]['ØVYf'¾bU'bUW\'?Uf`gfi \Y"'5V 8YnYa VYf'&\$&* 'gc``Yb'\]Yf'bi f'bcW\'nk Y]'NØ[Y'dfc'F]W\hi b['i bX HU['fc``Ybž'k À\fYbX'Yg'XYfnY]h'bcW\'ZØbZ'g]bX"'5i »YfXYa 'k]fX XYf *\(\frac{1}{2}\) hYfW]hm'j cb'; YfUž XYf '\(\tilde{O}\) VYf *\(\frac{1}{2}\) bUž K Y]a Uf'i bX'; ch\ U'bUW\
BcfXf\Y]b!K YghZU`Yb'Z\\ fhž ni 'Y]bYa 'b]W\ h'b\(\ha\\) Yf 'VYnY]W\ bYhYb\
NY]hdi b_h'\&\\$\&* 'Ui g[YgYhnh''; fi bX'XUZ\(\tilde{O}\)f']gh'X]Y'9`Y_hf]Z]n]Yfi b[\
XYg'5\VgW\ b]hhg nk]gW\ Yb'K Y]a Uf'i bX'; YfUž'X]Y'Yfgh'\&\\$\&+\
VY[]bbYb'gc``''8]Y'JYfV]bXi b['nk]gW\ Yb'K Y]a Uf'i bX'\\$\dangle bU'k]fX\
Z\(\tilde{O}\)f'nY\\b'\A cbUhY'_ca d`Yhh'Y]b[YghY``hž'k Ug'X]Y'Bchk YbX][_Y]h'j cb\
9fgUhnVi ggYb'a]h'g]W\ Vf]b[h''6YgcbXYfY'Gcf[Yb'k]fZh'Ui W\ XUg\
5i g'Z\(\tilde{O}\)f'X]Y'\(\dangle\)hYfW]hm!JYfV]bXi b['j cb'Fcghc\(\tilde{W}\)'\(\tilde{O}\)Yf'\(\dangle\)bUW\
K]Yb'Ui Z\(\tilde{Z}\)X]Y'[\(\dangle\)hn`]W\ '[Yghf]W\ Yb'k]fX''

$8 \, Yf \, k \,]fhgWX \, UZh^)WX \, Y \, 8 \, fi \, W \, k \, AWX \, gh$

GY]h'A cbhU[']gh'XUg'8Yi hgWX`UbXh]W_Yh'ZØf'(- '9i fc'Vi bXYgk Y]h
[Ø'h]['i bX'YfZfYi h'g]WX'j cf'U``Ya 'VY]'6Yfi ZgdYbX`Yfb'i bX
Ghi XYbhYb'[fc» Yf'6Y`]YVh\Y]h"'6YgcbXYfg']b'H\Øf]b[Yb'\Uh'a Ub
g]WX'i a 'Y]bY'GcbXYffY[Y`i b['VYa Ø\hž'X]Y'X]Y'Bi hni b['XYg
8 Yi hgWX`UbXh]W_Yhg'Ui Z'XYf' \delta hYfW]hm!GhfYW_Y'nk]gWXYb'9fZi fh'i bX
; YfU'ØVYf'K Y]a Uf'i bX' \delta bU'Yf`Ui Vh''Ni j cf'_cbbhYb'FY]gYbXY
X]YgY'J YfV]bXi b[Yb'Ui WX'a]h'BU\j Yf_Y\fgh]W_Yhg'bi hnYbž'k Ug
bi b'b]WXh'a Y\f'bOh][']gh'' @Ui h'H\Øf]b[Yb&('k i fXYb'V)g'ni a
GhUfh'XYg'H]W_Yhg'VYfY]hg'HUi gYbXY'9I Ya d`UfY'j Yf_Ui Zhž'k Ug'Ui Z
Y]bY'\c\Y'BUWXZfU[Y'\]bk Y]gh''

; $fYbnYbibXiA O[`]WX_Y]hYbiXYg$ 8 Yi hgWX`UbXh]W_Yhg Jcb XYb bYi Yb FY[Yi b[YbžX]Y XUg 8 Yi hgW `UbXh]W_Yh
Yfa Ò[`]W Ybžk]fX X]Y : Yfbj Yf_Y\fgUbk YbXi b['YXcW 'b]W h ZØf
U`Y NØ[Y]b [`Y]W Ya 'A U» Y [Y`hYb" K c XUg 'H]W_Yh []`h i bX k c
b]W hž Vf]b[h: fU[Yb 'Ui Zž X]Y 'g]W 'FY]gYbXY 'ghY ``Yb 'a ØggYb"'

-bg]XY '8][]hU` k Y]gh XUfUi Z`\]bž XUgg X]Y 'Bi hni b['XYg
8 Yi hgW `UbXh]W_Yhg ']b XYb '=7! i bX '=79! NØ[Yb 'bi f'Ui Z'VYgh]a a hYb
GhfYW_Yb 'Yfgh'a Ò[`]W ']gh" <]Yfni 'nÀ\ `Yb 'i bhYf 'UbXYfYa 'X]Y
GhfYW_Y j cb '9fZ fh'bUW '; YfU gck]Y 'UbXYfY 'Ui g[Yk À\ `hY
J YfV]bXi b[Yb": Øf'j]Y Y 'UbXYfY': YfbnØ[Y 'V`Y]VhXUg 'H]W_Yh
YXcW '[YgdYffh"

9]b][Y'GhfYW_Yb'_ObbhYb'X]Y'DYbX`YfghfOa Y'Ui ZfYWkhYf\U`hYbžkÀ\fYbX'ZØf'XYb'FYgh'dc`]h]gWkY'@Ogi b[Yb'[YZcfXYfh'g]bX"'8]Y8]g_i gg]cb'i a 'XUg': U\fYb'a]h'XYa '8Yi hgWk`UbXh]W_Yh']b: YfbnØ[Yb'nY][hž'k]Y'k]Wkh]['Yg']ghž'XYb'JYf_Y\f']b'XYf'FY[]cbVYXUfZg[YfYWkh'Ui gni [YghU`hYb'i bX'Ei U`]hÀh'j cf'Ei Ubh]hÀh'nighY``Yb"

8 Y hU]`g	
Cfh	≯bUž8Yi hgWX`UbX
EiY``Yb	• k k k "a Xf"XY
	• k k k "h\i Yf]b[Yb&("XY
	• k k k "]bg]XY!X][]hU`"XY

6Ygi WXYb G]Y i bg Ui Z b!U["bYh