

HfUi a VYfi Z'DZYfXYk]fh. 'Gc'[Y`]b[h'X]Y 5i gV]`Xi b[']b 'A cf]hnVi f['

@ _Ug'D]YhngWX 'VY[]bbh'&\$&' ']b'Acf]hnVif['gY]bY 5igV]`Xib['nia'DZYfXYk]fh" \DZcg'nia'6YfiZ'ibX 6YkYfVib[gZf]ghYb'ZØf'\DhYfYgg]YfhY"



A cf]hnVi f[ž:8 Yi hgW `Ub X :! '9]bYb 'HfUi a '`YVYb. '@i _Ug
D]YhngW ž'%- '\lambda \text{Y \text{U \hz} a \text{UW hgY]h \&\&' \text{Y \text{JbY \text{5} i gV} \text{X} i b['ni a \text{DZYfXYk]fh']a '@Ub XYg[YghØh'A cf]hnVi f["'5 `g'Y]bYf'j cb'')
@Y\f`]b[Yb']b 'XYf'GÀW g]gW Yb'; YghØhgj Yfk U`hi b['XUj cb''\&']b
A cf]hnVi f['i bX 'XYf'F Ygh']a '< Ui dh[YghØh'; fUX]hn' \Uh'Yf'g]W\
gY]bYa '< YfnYbgh\Ya U'[Yk]Xa Yh 'XYf'5fVY]h'a]h'DZYfXYb"'8]YgYb
GW f]hh'i bhYfbU\a 'Yf'hfchn'UbZ\\b [`]W\Yf'Ni fØW_\U`hi b['gY]bYf
9`hYfb'i bX '`Y[h'gY]hXYa '< UbX 'Ubz'i a 'Y]bYb'6Yfi Z'a]h'Ni _i bZh'ni
Yf`YfbYb"'G\\AW g]gW\Y'VYf]W\\hYhz'XUgg'

 $8]Y'5i gV]`Xi b[']gh'ZØf'@i_Ug'Y]bY'dYfgÒb`]WXY'GUWXY.'GY]b\\ I fi f[fc»j UhYf'k Uf'GUhhY`a Y]ghYf']b'HfU_Y\bYbž'VYj cf'Yf'%-()\\ bUWX'GUWXgYb'Zc\"'=bhYfYgg]YfhY'6Yk YfVYf]bbYb'i bX'6Yk YfVYf$

\UVYb`X]Yga U``V]gʻni a '%) "'Bcj Ya VYf`&\$&' `NY]hžg]W\`ZØf`Y]bYb
5i gV]`Xi b[gd`Uhn`ni `VYk YfVYb"`CV`]a '@UbX[YghØh`A cf]hnVi f[žk c
Ygʻdf]a Àfi a 'X]Yʻ6YhfYi i b[ii bX`DZY[Yjcb'<Yb[ghYb'gck]Y`XUg
Ni W\h[YgW\AZh`]b`XYf`9I!6YgUa i b[gghUh]cb'[Y\hžcXYf`]a
<Ui dh[YghØh; fUX]hnžk c'X]Y`Ghi hYb\YfXY`i bX'¾ b[dZYfXY`VYhfYi h
k YfXYbž'X]Yʻ5i gV]`Xi b['V]YhYhj]Y`ZÀ`h][Y`A Ò[`]W_Y]hYb"`5i Z`XYf
K YVg]hY`XYf`GÀW\g]gW\Yb`; YghØhgj Yfk U`hi b['_ObbYb
k Y]hYfY'=bZcfa Uh]cbYb`XUni `[YZi bXYb`k YfXYb"

9]b HU[]a @YVYb Y]bYg DZYfXYk]fhYg

 $: f\emptyset \ ``Ui Z`XYb``6Y]bYb. ``@i _Ug``HU[``VY[]bbh``VYfY]hg`i a ``*`I \ f`a]h GhU```UfVY]hYb"`5i ga]ghYbž`: ØhhYfb`i bX``DZY[Y``XYf``DZYfXY``g]bX``bi f Y]b][Y``XYf`5i Z[UVYbž`X]Y`]\b``Yfk UfhYb"`8 Ug``GW\`ObY``Ub``X]YgYa 6Yfi Z3``¾XYf``HU[``Vf]b[h`bYi Y`< YfUi gZcfXYfi b[Yb`a]h`g]W\ž`[Ubn bUW\`XYf``Gh]a a i b[``XYf`DZYfXY"`@i _Ug`\Uh`Yfgh`Y]b``\J\f`ni j cf`a]h XYa ``FY]hYb``VY[cbbYb`i bX`nY][h`VYfY]hg`hc```Y`: cfhgW\f]hhYž`k]Y]\a ``< Ui dhgUhhY`a Y]ghYf`: U`_'`G]YVYf`VYgW\Y]b][h"`8]Y`_OfdYf`]W\Y :]hbYgg`]gh`i bYf``Agg`]W\ž`XYbb``X]Y``5fVY]h`]gh``U```Yg``UbXYfY``U``g `Y]W\h"$

8 c WX 'X Ug 'F Y]hY b ']gh'b] WX h'bi f'5 fVY]h" '8]Y '5 ni V]g'bY\a Yb 'ZUgh hÀ[`]WX 'Ub 'F Y]hghi b XYb 'hY] 'ž'i a 'g]WX 'Ui Z'K YhhVYk YfVY j cfni VYfY]hYb" 'Gc 'k]fX '@ _Ug ']a '5i [i gh'Ub 'XYb' < Yb[ghd Uf UXYb hY] `bY\a Yb 'i b X 'Y]b 'GWX Ui V] `X 'b Ua Ybg' I b[Uf]gWX Y 'Dcgh df ÀgYbh]YfYb" '9]b 'a i `a][Yg'; YZØ\`'j cf'5i Zhf]hhYb'_Ybbh'@ _Ugž U``YfX]b[g': fYi XY'i b X 'B Yfj Yb_]hnY`'g]b X 'ghYhg'HY]`'XYg 9f`YVb]qqYq"

JcfUi ggYhni b[Yb'i bX'? Uff]YfYWX UbWYb

K Yf'XYb'K Y['U`g'DZYfXYk]fh'Y]bgW\`U[Yb'a ÒW\hYž'VYbÒh][h'Y]bYbYfZc`[fY]W\Yb'GW\i`UVgW\`i gg'gck]Y'Y]bY'[fc»Y'6Y[Y]ghYfi b['ZØfDZYfXY"'Ni XYa 'gc``hY'a Ub'ØVYf'JYfUbhk cfhi b[gVYk i gghgY]bž9]bgUhnVYfY]hgW\UZh'i bX'_ÒfdYf`]W\Y':]hbYgg'j YfZØ[Yb''; YdfÀ[hk]fX'X]Y'5i gV]`Xi b['Xi fW\'Y]bY'Zi bX]YfhY'; fi bXUi gV]`Xi b[ž'X]Ygck c\``]a 'dfU_h]gW\Yb'U`g'Ui W\']a 'h\YcfYh]gW\Yb'6YfY]W\ghUhZ]bXYh'''9]bY', VYfq]W\hXYf'5i qV]`Xi b[q]b\U`hY'V]YhYh'

Ui qV]`Xi b["XY"

8]Y '5i gV]`Xi b['XUi Yfh']b 'XYf'FY[Y` 'XfY]' \$J\ fY'i bX'_Ubb'i bhYf VYgh]a a hYb'J cfUi ggYhni b[Yb'Ui Z'nk Y]' \$J\ fY'j Yf_Øfnh'k YfXYb" BUW\ 'YfZc`[fY]W\ Ya '5VgW\`i gg'`]Y[h'XUg'9]bgh]Y[g[Y\U`h'VY]'Yhk U &"&\$\$'9i fc'Vfi hhc"'5i W\ 'K Y]hYfV]`Xi b[Ybž'k]Y'ni a DZYfXYk]fhgW\ UZhga Y]ghYfž'ghY\Yb'XYb'5Vgc`j YbhYb'c\ZZYbž'k Ug nU\`fY]W\Y'? Uff]YfYk Y[Y']a '6YfY]W\ 'XYf'DZYfXY\U`hi b['i bX !ni W\ h'YfÒZZbYh"

 $8]Y `B UWX ZfU[Y `b UWX `5i gni V]`XYb XYb `ghY][h `ghYh][/]bgVYgcb XYfY A ÀXWX Yb `gWX Y]bYb `j cb `XYb `fca Ubh]gWX Yb `J cfghY``i b[Yb `XYg 6Yfi Zg `Ub[Ync[Yb `ni `k YfXYb ž `k]Y `; YghØhg`Y]hYf]b `8 f" `? Uh] GWX Od_Y `VYf]WX hYh" `8]Yg `]gh `Y]b `NY]WX Yb `ZØf `X]Y `6Y`]YVh\Y]h `XYg 6Yfi ZYg `i b X `XUg `[fc » Y `<math>\Rightarrow$ hYfYggY `XYf \Rightarrow [Yb X`]WX Yb `Ub `XYf `5 fVY]h a]h `X]YgYb `ZUgn]b]YfYb XYb `H]YfYb"

: Øf'U``YžX]Y'Y]b'[i hYg'< ÀbXWXYb'ZØf'DZYfXY'\UVYb'i bX'g]WX'ZØf Y]bY'5i gV]`Xi b[']bhYfYgg]YfYbž'`ÀXh'XUg'@UbX[YghØh'A cf]hnVi f[Ua'("'C_hcVYf'ni 'Y]bYa'=bZchU['Y]b"'J]Y``Y]WXh']gh''U'Ui WX'ZØf'X]WX XYf'HfUi a'j ca'DZYfXYk]fh'[fY]ZVUf'bU\°

8 YhU]`g	
Cfh	Acf]hnVif[ž'8YihgWX`UbX
EiY``Yb	 k k k "gUYWX g]gWX Y"XY k k k "gUYWX g]gWX Y! [Yghi Yhgj Yfk U`hi b["XY k k k "Ui gV]`Xi b["XY

6 Ygi W Yb G Y i bg Ui Z b! U ["b Yh