

@YVYbgfYhhYbXYf`BchfiZ. 8fc[Yb_cbgia 'Ua 'Gd]Y`d`Uhn']b 5bgVUW

8 fY] ' $\stackrel{\cdot}{\Rightarrow}$ [YbX`]W\Y']b'5bgVUW\'bUW\'8 fc[Yb_cbgi a VYk Y[i b[gi bZ\]['Ui Z'Gd]Y`d`Uhn'[YZ bXYb"'9]b'%) ! $\stackrel{\cdot}{\Rightarrow}$ \f][Yf U`Ufa]YfhY'X]Y'F Yhhi b[g_f\ZhY"

" '9]b'VYgcf[b]gYffY[YbXYg'9fY][b]g'YfY][bYhY'g]W\'Ua
A]hhk cW\UVYbX']b'5bgVUW\.'8fY]'\[infty][YbX\`]W\Y'a i gghYb'bUW\
Y]bYa'8fc[YbjcfZU\``]a'?fUb_Yb\Ui g'VY\UbXY\`h'k YfXYb"'8]YgYg
9fY][b]g'k]fZh:fU[Yb'ni'8fc[Yb_cbgi a'i bhYf'\[infty][YbX\`]W\Yb'Ui Z
i bX'nY][h'X]Y';YZU\fYb'Ui Z\[infty]']b'XYb'Gh\[infty]h'Yb'i bgYfYf
;YgY\``gW\UZh\``Ui Yfb'''

9]b a i h][Yf 5bfi ZfYhhYh @YVYb

5a 'gdÀhYb'A]hhk cW\UVYbXž'[YbUi Yf'[YgU[h'[Y[Yb'&&.(\$'I\fž\UbXY\hY'Y]b'%)!A\f][Yf'\$\delta b[Y'gW\bY\\iibX'U\Ufa]YfhY'X]Y

FYhhi b[g_fÀZhY"'GY]b'VY\YfnhYf'5bfi Z'_ObbhY'XUni 'VY][YhfU[Yb\UVYbž'XfY]'gY]bYf'5\hYfg[YbcggYb'XUg'@YVYb'ni 'fYhhYb"'8]YgY

\$\delta [YbX\]W\Ybž'nk Y]'\%*!\A\f][Y'i bX'Y]b'\%+!\A\f][Yfž'k UfYb

c\ZZYbg]W\h']W\']b'Y]bYa '_f]h]gW\Yb'; Ygi bX\Y]hgni ghUbXž'bUW\XYa
g]Y'Ua 'Gd]Y\d\Uhn']b'XYf'@Ygg]b[ghfU\)Y'8fc[Yb'_cbgi a]Yfh
\UhhYb"

8]Y XfUa Uh]gWX Yb 5i gk]f_i b[Yb j cb 8fc[Yb cbgi a

8 Yf'Ni ghUbX'XYf'¾ [YbX`]WXYb'k Uf'U`Ufa]YfYbX.'G]Y'k UfYb VYk Y[i b[gi bZÀ\]['i bX'bi f'bcWX'Y]b[YgWXfÀb_h'UbgdfYWXVUf" @Ui h'5b[UVYb'XYf'Dc`]nY]'5bgVUW\ '\UbXY`h'Yg'g]W\ 'VY]'X]YgYb

\$\forall [YbX`]W\Yb'i a 'VY_UbbhY'; Yg]W\hYfž'\YXcW\ 'k Uf']\f'Ni ghUbX

X]Yga U`'VYgcbXYfg'VYgcf[b]gYffY[YbX"'8]Y'gcZcfh][Y

a YX]n]b]gW\Y'JYfgcf[i b['k Uf'i bi a [Ab[`]W\ž'k Yg\U`V'X]Y

9]bgUhn_fAZhY'i a [Y\YbX'ni 'XYb'VYhfcZZYbYb'\$ [YbX`]W\Yb'Y]`hYb"

; YZU\fYb XYg A]gWX _cbgi a g

8]Y:c`[Yb:XYg:8fc[Yb_cbgi a g:g]bX:ZUhU`":6Y]:XYa :JcfZU``kifXYb:jYfgWk]YXYbY:Gi VghUbnYb:_cbgi a]Yfhž:XUfi bhYf A Uf]\i UbUž:7cXY]bhfcdZYb:i bX:9WghUgm!HUV`YhhYb":8]Y:Dc`]nY]
[Y\h:XUj cb:'Ui gž:XUgg:X]Y:A]gWki b[:X]YgYf:8fc[Yb:ni:'Y]bYf gc[YbUbbhYb:'A]gWk]bhcl]_Uh]cb:'ZØ\fhYž:k Ug:'VYXYi hYhž:XUgg:'X]Y i bhYfgWk]YX`]WkYb:'K]f_ghcZZY:]b:'?ca V]bUh]cb:'[YZÀ\f`]WkYf:g]bX:'U`gY]bnY`b"

Dc`]nY]'gi Wh'bUW 'ni gÀhn`]W Yb'6Yk Y]gYb

BUWXXYa 'X]Y' is [YbX`]WXYb' j Yfgcf[h'k i fXYbž'gYhnYb'X]Y'Dc`]nY] i bX'Y]b'8fc[YbgdØf\i bX']\fY'Gi WXY'bUWX'k Y]hYfYb 6Yk Y]ga]hhY`b'Zcfh"'G]Y'Xi fWXgi WXhYb'X]Y'I a [YVi b['XYg Gd]Y`d`UhnYg'i bX'ZUbXYb'X]j YfgY'8fc[Ybi hYbg]`]Yb"'8]Y'9`hYfb'XYf VYhfcZZYbYb'is [YbX`]WXYb'k i fXYb'gWXbY``]bZcfa]Yfhž'k À\fYbX XfY]'UbXYfY'Ubk YgYbXYž'b]WXh'VYhfcZZYbY's b[Yb'g]WXYf'Ub']\fY 9fn]Y\i b[gVYfYWXh][hYb'ØVYf[YVYb'k i fXYb"

9]b 5i Zfi Z'ni f 5i Z_`Àfi b['ØVYf 8fc[Yb

8]YgYg'VYXUi Yf`]WXY'9fY][b]g'i bhYfghfY]WXh'X]Y'Bchk YbX][_Y]hž
[Yn]Y`hY'5i Z_`Àfi b[gdfc[fUa a Y'ØVYf'8fc[Yba]ggVfUi WX'i bhYf

\$\forall [YbX`]WXYb'ni 'Z\OfXYfb"'5i WX'k Ybb']b'j]Y'Yb'Gh\AXhYb

\$\div Zcfa Uh]cbYb'ni 'XYb'F]g]_Yb'j YfZØ[VUf'g]bX\dotz'nY][h'X]YgYf'JcfZU``\dotz
XUgg'XYf'8fc[Yb_cbgi a ']b'\Øb[YfYb'5`hYfg[fi ddYb'Y]b

VYXYi hYbXYg'DfcV'Ya 'XUfghY``h"; Ya Y]bXYb\dotz'GWXi 'Yb'i bX'9`hYfb

g]bX'[YZcfXYfh\dotz'df\and jYbh]j Y'A U\sbU\a Yb'ni 'Yf[fY]ZYb\dotz'i a

\$\dots [YbX`]WXY'\ØVYf'X]Y'; YZU\fYb'XYg'8fc[Yb_cbgi a g'Ui Zni _`\and fYb

i bX'<]`ZY'Ubni V]YhYb\dotz'VYj cf'Yg'ni 'Yfbgh\UZhYb'JcfZ\and ``Yb'_ca a h"

8]Y'G]hi Uh]cb']b'5bgVUW\]gh'Y]b'K YW_fi Z'ZØf'5``Y"'9]b _ccfX]b]YfhYg'J cf[Y\Ybž'i a 'X]Y'F]g]_Yb'ni 'a]b]a]YfYb'i bX I bhYfghØhni b['VYfY]hni ghY``Ybž']gh'YggYbn]Y``ž'i a 'X]Y'G]W\Yf\Y]h i bX'; Ygi bX\Y]h'i b[Yf'A YbgW\Yb']b'i bgYfYf'; YgY``gW\UZh'ni [Yk À\f`Y]ghYb"

8 Y hU]`c

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