

# GdY\_hU\_i `AfYg'FYa ]g. I b]cb'6Yf`]b'i bX ; `Ug[ck'FUb[Yfg'Yf`YVYb'HcfZYgh

I b]cb'6Yf`]b'Yfn]Y`hY'Y]b'gdY\_hU\_i `ÀfYg'(.('[Y[Yb'X]YFUb[Yfg"'HfU]bYf'GjYbggcb'ZcfXYfh'Yhnh'a Y\f'8YZYbg]jYibX'9ZZ]n]Ybn"

# 8]Y 5i gk ]f\_i b[ Yb XYg ( . (!Gd]Y `g j cb l b]cb 6Yf `]b Ui Z X]Y HYUa XmbUa ]\_

 $8 \ Ug'gdY\_hU\_i ``AfY'I bYb hgWX ]YXYb'XYg''': 7'I b]cb'6Yf`]b'[Y[YbX]Y'; ``Ug[ck'FUb[Yfg'\Uh'j]Y``a Y\f'U`g'bi f'Y]b][Y'HcfY'[Y`]YZYfh'' 6 YgcbXYfg']b'XYf'YfghYb'< U`VnY]h'\_cbbhY'XUg'HYUa 'XYf'9]gYfbYb nY][Ybž'XUgg'b]WXh'bi f'X]Y'CZZYbg]j Yž'gcbXYfb'Ui WX'X]Y'8 YZYbg]j Y\fUi g[YZcfXYfh'k]fX'''8 Ug'9f[YVb]g'j cb'(.(<math>\check{z}$ ']bgVYgcbXYfY'X]Y d\UgYbk Y]gY'WXUch]gWXY'YfghY'< A`ZhY'a]h'Y]bYa''.' 'ni f'< U`VnY]hž\Uh']b'XYf'7ca a i b]hm'i bX'VY]'XYb'HYUa a ]h[`]YXYfb': fU[YbUi Z[Yk cfZYbž'X]Y'k Y]h'ØVYf'XYb'Gd]Y`hU['\]bUi g[Y\Yb''

#### 5bU`mgY`XYf`8YZYbg]j dfcV`Ya Uh]\_

Nk Y]ZUWXYf'HcfgWXØhnY'&b]\_'<UVYfYfž'XYf'Ui Z'XYf'i b[Yk c\bhYbfYWXhYb'5i »YbVU\b'gd]Y`hYž'Ài »YfhY'g]WX'ni a '8 YZYbg]j Y!

DfcV`Ya . ' A Ub'\Uh'[YgY\Ybž'XUgg'XYZYbg]j 'b]WXh'U``Yg'gc

Zi b\_h]cb]Yfh'\Uh''K ]f'k c``hYb'ZfØ\'dfYggYb''K Ybb'a Ub'Y]bYb'H]W\_
ni 'gdÀh'XfUb']gh'i bX'XUbb'X]Y'8i Y``Y'Ui Z'XYf'GY]hY'j Yf']Yfhž'[Y\YbX]Y'FÀi a Y'Ui Z' '8]YgY'5i ggU[Y'nY][h'XYi h`]WXž'XUgg'hfchn
]bhYbg]j Yf'6Ya Ø\i b[Ybž'Y]b'DfYgg]b[!GmghYa 'ni
]a d`Ya Ybh]YfYbž'XYf'A UbbgWXUZh'Y]b][Y'<UbX[f]ZZY'ZY\`Ybž'i a
X]Y'Ghfi \_hi f'ni 'ZYgh][Yb"

### JcfVYfY]hi b[ 'Ui Z'X]Y'\_ca a YbXY'GU]gcb

8]Y'8YZYbg]j Y']gh'b]W\h'XUg'Y]bn][Y'5b`]Y[Ybž'XUg'HfU]bYf
Gj Ybggcb']a '6`]W\_'\Uh''K Ybb[`Y]W\'XUg'`YhnhY'GU]gcb'Yfbgh\UZhY
DfcV`Ya Y'a ]h']bg[YgUa h'), '; Y[YbhcfYb'Ui Zk]Ygž'V`Y]Vh'X]Y'NY]h
V]g'ni a '8: 6!Dc\_U`gd]Y`']b'; fY]Zgk U`X'Ua '%+"'5i [i gh
YbhgW\Y]XYbXž'i a 'X]Y'GW\k\AW\Yb'ni ']XYbh]Z]n]YfYb'i bX'ni
VYgY]h][Yb"'6Y]'X]YgYf'J cfVYfY]hi b['\Uh'Gj Ybggcb'ni f'<U`VnY]h
Y]bYb'\_ca d`YhhYb'K YW\gY`'XYg'DYfgcbU`g'j cf[Ybca a Ybž'k Ug
ni g\Ahn`]W\Y'<YfUi g\ZcfXYfi b[Yb'a]h'g]W\'Vf]b[h' ']bgVYgcbXYfY
Z\Øf'X]Y'\DhY[fUh]cb'bYi Yf'Gd]Y`Yf''

#### GWXi hn XYf 9A!: U\fYf

$$\begin{split} &\text{I a "X]Y "5i gXUi Yf"gY]bYf"Gd]Y `Yf"ni "gW\cbYbž"`]Y "Gj Ybggcb \\ &\text{k Å\fYbX"XYg"Gd]Y `g"X]Y "9A !: U\fYf": fYXYf]_"F Obbck <math>\check{z}$$
 "\$\varepsilon g]d \\ &\text{\$\dot{z}\$ fUbcj ]W\$\bar{z}\$ 5bXfUg"GW\AZYf"i bX "@Ugn`c"6YbYg"Ui Z'XYf"6Ub\_""8]YgY \\ &\text{\$g\$ 9bhgW\Y]Xi b[ "k Y]gh"Ui Z'Y]b"`Ub[ Zf]gh][ Yg"8Yb\_Yb"\]b\varepsilon zXUg"gck c\`X]Y"Gd]Y"Y"XYf"`Ui ZYbXYb"GU]gcb"U"g"Ui W\"X]Y"5bZcfXYfi b[ Yb"Ub X]Y"Gd]Y"Yf"VYf\vartheta W\_g]W\"\h][ h" < ]Yf"nY][ h'g]W\"X]Y"6U"UbWY nk ]gW\"Yb XYf"Bchk YbX][ \_Y]h\vartheta 9f[ YVb]ggY"ni "Yfn]Y"Yb\vartheta i bX"XYf"DZY[ Y"XYf \_OfdYf"]W\"Yb": ]hbYgg"XYf"Gd]Y"Yf"

#### 6`]W\_'Ui Z'X]Y'Hcfk Ufhdcg]h]cb

±b '6Yni [ 'Ui Z'X]Y 'Dcg]h]cb 'XYg 'Hcfk Ufhg' [ UV 'Yg 'YhnhY J YfÀb XYfi b [ Yb "'8 Yf 'Dfc VYhcfk Ufh' 7 Uf`'? `Ui g'gd]Y `hY ']b 'XYf YfghYb' < À`ZhY 'i b X'j Yf`]Y » 'XUg 'GhUX]cb 'Ua 'GUa ghU [ 'a ]h 'nk Y] ; YdÀW\_ghØW\_Yb "'5a 'GcbbhU [ 'Zc` [ hY 'X]Y 'c ZZ]n]Y``Y '6Y\_Ubbh [ UVY gY]bYf'J Yfd Z]WX hi b [ 'VY]a '%": 7 'I b]cb 'Y]b 'GWX f]hhž XYf 'nY][ hž XUgg 'XYf'J YfY]b 'a Ò[ `]WX Yfk Y]gY 'K Y]WX Yb 'ZØf'Y]bY 'ghUV]`YfY Ni \_i b Zh 'ghY``h"

## 8]Y'<YfUi gZcfXYfi b[Yb'XYf'bYi Yb'GU]gcb

8]Y'<YfUi gZcfXYfi b[Ybž'X]Y'g]W\'Ui g'X]YgYa '(.('Yf[YVYbž'nY][YbX]Y'?ca d`Yl]hÀhž'a ]h'XYf'HfU]bYf'Gj Ybgqcb'i bX'gY]b'HYUa

\_cbZfcbh]Yfh'g]bX"'8]Y'6U`UbWY'nk]gWXYb'CZZYbg]jY'ibX'8YZYbg]jY
]gh']b'X]YgYf'ZfØ\Yb'D\UgY'XYf'GU]gcb'YbhgWXY]XYbX"'9g'V`Y]Vh
UVnik UfhYbž'k]Y'gWXbY``'XUg'HYUa'gY]bY'bYiY'Gd]Y`kY]gY
jYf]bbYf`]WXYb'\_Ubb'ibX'cV'X]Y'[Yd`UbhYb'JYfÀbXYfib[Yb
hUhgÀWX`]WX'ni'Y]bYf'bUWX\U`h][Yb'JYfVYggYfib['ZØ\fYb'kYfXYb"

B5;

8 Y hU] `c

6Ygi WXYb G]Y i bg Ui Z a Y]b!VYf`]b bYh