

5dd`]Wjcb

A chj UjcbU '7 cj Yf '@YrhYf

A chj UjcbU '7 cj Yf '@YrhYf ! CdYb]b[

; fY\_

ž

: cfa Uža UYfYd]Ybhžbúa Yí b\_bck b

; Yfa Ub

Gñf [ YMfHf < Yffž

ž

Gñf [ YMfHf: fu ž

: cfa Uža UYfYd]Ybhžbúa Yí b\_bck b

# ž

Gñf [ YMfHf'8úa Yb i bX < YffYbž

: cfa UžfYd]Ybhbúa YUbX [ YbXYf i b\_bck b

ž

Gñf [ YMfHf'8úa Yb i bX < YffYbž

: cfa Užk \YbUXxfYgg]b[ 'gj YfU i b\_bck b'dYcd'Ycf'Uk \c'YXYdUha Ybh

#

ž

Gñf [ YMfHf'8úa Yb i bX < YffYbž

: cfa UžfYd]Ybh#gbúa YUbX [ YbXYf'Wd a d'YH mi b\_bck b

ž

Gñf [ YMfHf < Yff'GWa ]Xž

: cfa Uža UYfYd]Ybhžbúa Y\_bck b

ž

Gñf [ YMfHf: fu 'GWa ]Xž

: cfa Uža UYfYd]Ybhža Uff]YXžbúa Y\_bck b

ž

Gñf [ YMfHf: fu 'GWa ]Xž

: cfa Uža UYfYd]Ybhžg]b[ 'Yžbúa Y\_bck b

ž

Gñf [ YMfHf: fu 'GWa ]Xž

: cfa Uža UYfYd]Ybhžbúa Y\_bck bža Uf]h g'hi g'i b\_bck b

ž

@]YWf < Yff'GWa ]Xž

@YggZcfa UžcbY\UgXcbYVi g]bYgg'k ]h h YfYd]YbhVYZcfY

< ]Yfa ]hWk YfVY]W'a ]W'i a 'X]YGH'YUg'''Z[X]Y'G]Y]b  
'''j ca '''U g[Ygf]YYb 'UVb"

GħubXUFXZcfa i `UZcf'Udd'm]b[ 'Zcf'U'cV'k \cgYUXj Yfh]għa Ybhinci ġuk ]b'U'bYk gdidYf'cf'a U[ Uh]bY

6Yri [ bYa YbX'U Z=AfY'5bnY][ YU Z'''gWfY]W  
=bYb'''

GħubXUFXZcfa i `Ui għX'k \Yb'fYgdcbX]b[ 'h'U'bUXj Yfh]għa YbhdcgħX'cb]bY

5dd`]Wjcb

A chj UjcbU '7 cj Yf '@YrhYf

6Yri [ bYa YaXUi ZAfY5bnY][Y]b""j ca ""

GubXufX Zcfa i `Ui gYXhc Yi d'Ub'k \YfY'mci Zi bX'hYUXj Yfh]gYa YbhZcf'U'cv

A ]h[ fc»Ya =bhYfYggY\UY]W AfY5bnY][Y]ZOF'X]Y  
Dcgjh]cb Y]bYgYfZL\YbYb""]b XYf'5i g[UY""j ca ""  
[YYgYb"

: cfa i `Ui gYX'k \Yb'Udd'm]b[ 'Zcf'U'cv'\U ]b[ 'gYYb'hYUXj Yfh]ga Ybh]b'U'a U[ Uh]bY'cf'dYf]cX]vU

5i ZXUgj cb AfYb'U g[ YgWf]WVbYGHY'YbUb[ Wch  
VYk YfVY]W'a ]W'[ YfbYz]k Y]""

GubXufX Zcfa i `UZcf'Udd'm]b[ 'Zcf'U'cv

=WVYk YfVY]W'a ]W'i a X]YGHY'YUg""

GubXufX Zcfa i `UZcf'Udd'm]b[ 'Zcf'U'cv

8YfnYjhUFVY]W ZOF""Ni 'a YjbYb'5i Z[UWb'nA\`Yb""

I gYX'Ug'Ub'cdYb]b[ 'gYbH'bW'hC'XYgW]VY'mci f'WffYbhicW/dUh]cbU'gh]hi g'UbX'k \Uh]h]bj c'j Yg

A chj UjcbU '7 cj Yf '@YrhYf ! F YUgcb]b[

; fY\_

; Yfa Ub

8]YGHY'Y]ghZOF'a ]W'j cb[ fc»Ya =bhYfYggYz]k Y]""

I gYXhc Yi d'Ub'k \mnci 'k ci 'X'']Y'U'Wfh]b'cv

; YfbYk OFXY]W ZOF'G]YUFW]Hbzi a ""

I gYXhc Yi d'Ub'k \mnci 'k ci 'X'']Y'U'Wfh]b'cv

Ni 'a YjbYb GHAF\_Yb'nA\`Yb""

I gYXhc g'ck 'k \Uhnci f'\_YmUhf]Vi hYg'UfY

=W'XYb\_Yzni 'a YjbYb'GWk AWYb'nA\`Yb""5Wf]W  
UFVY]HYXUFUbza ]W']b X]YgYa '6YfY]W'#X]YgMb'6YfY]WYb  
ni 'j YfVYggYfb"

I gYXhc fYZWb]i dcB'mci f'k YU\_bYggYg]Vi hg'ck 'k Uhnci 'UfYXYHfa ]bYX'hc ]a dfcj Y]b'KcgY'UfYUg

5dd`]W[h]cb

A ch]j U]cbU '7 cj Yf '@YrhYf

#

=W'Y][ bYa ]W'ZOF'X]YgY'Dcg]h]cbžk Y]'"

I gYX'hc'YI d'U]b'k \Uhia U\_Yg'mci 'U[ ccX'VUbX]XUhY'Zcf'hkY'čV

""z

Nk UF'\_Ubb ]W'\_Y]bY'9fZLñfi b[ ]b'''j cfk Y]gYb/XUZOF'\UVY]W'''

I gYX']Zmci '\U Y'bYj Yf'\UX'hkY'VUbW'hc'k cf\_]b'UWfh]b'Vi g]bYgg]Y'Xž'Vi hVUb'XYa cbghfUhY'ei U]hYg]Zfcia 'chYf YI dYf]YbVWg'mci '\U Y'\UX

#

A Y]bY'VYfi Z]WVYb'E i U]Z\_U]cbYb'Ybhgdf'WVYb'XYb 5bZcfXYfi b[ Yb'ñfYgI bñhf'bñla Ybg'

I gYX'hc'YI d'U]b'k \Uhia ]`g'a U\_Yg'mci '[ ccX'VUbX]XUhY'Zcf'hkY'čV

""z

K Á\ñfYbX'a Y]bYf'NYjhUg'''UVY]W'a Y]bY? Ybbhb]ggY ]b'''j YfVWggYfh#Yfk Y]hYfhi#j YfH]Yh"

#

#

I gYX'hc'XYa cbghfUhY'mci f'YI dYf]YbVW']b'UWfh]b'Z]Y'X'UbX'UV']hmihc'Uei ]fY'bYk 'g\_]'`g

A Y]b': UW[YV]Yh]gh'''

I gYX'hc'g\ck ']b'k \]W'Z]Y'X'cZk cf'\_mci f'a U]b'Uhf]Vi hYg'UbX'YI dYf]YbVWg'UfY

K Á\ñfYbX'a Y]bYf'5fVYjhVY]'''V]b']W']b'''gñf gñW\_i bX][ 'Yk cfXYb'''

I gYX'hc'XYa cbghfUhY'mci f'YI dYf]YbVW']b'UWfh]b'Z]Y'X'UbX'UV']hmihc'Uei ]fY'bYk 'g\_]'`g

ž

5i W]b'gñfYgg][ Yb'G]h]U]cbYb'j YfbUW'Agg][ Y]W'b]Wh Gcf[ZUhii bX'; YbU ][\_Y]h'8UñYf'k ÁfY]W'VYgcbXYfg [YY][ bYhZOF'X]Y'5bZcfXYfi b[ Yb'Ug'''

I gYX'hc'YI d'U]b'k \mnci 'k ci 'X'VY'[ ccX'UhkY'čV'i g]b[ 'hY'YI dYf]YbVW'[ U]bYX'Zfcia 'mci f'dfYj ]ci g'Ya d'cmñ Ybh \]gñfm

5i W'i bñhf'6YUgi b[ 'WñUñY]W'\c\Y E i U]hAgghUbXUfXg'VY"

I gYX'hc'g\ck 'hUhmcí 'Wb'k cf\_]b'U'XYa UbX]b[ 'Vi g]bYgg'Ybj ]fcba Ybh

Gca ]hk OFXYg]W'ZOF'a ]W'X]Y; YY[ Yb\YjhYf[ YYbž = Y]bY'=bñhfYggYb'a ]hX]YgYf'Dcg]h]cb'ni j Yf\_bñdZb"

I gYX'hc'g\ck 'hUhmcí '\U Y'U'dYfgcbU' ]bñhfYgh]b'hY'čV

5dd`]W[h]cb

A ch]j Uh]cbU 7 cj Yf @YrhYf

=W ]bhYfYgg]YfY'a ]W [ Ubn'WgcbXYfg]ZOF X]YgY'GhY`Yi bX  
k OF XY'a ]W gMf OMYf X]Y; YY[ Yb\YjhZfYi Ybž]b XYf  
Ni gJa a YbUFVY]ha ]h=AbYb'a Yjb'K ]ggYb'ni 'Yfk YjhYfb"

I gYX'hc'g\ck 'hUhmc \U Y'U'dYfgcbU ]bhYfYgh]b'hY'cv

Z K ]Y'G]Y'a YjbYa 'W][ YZOF Hb'@WYbgU ZYbbHbY'a Yb  
\_obbYbžYbhgdYWWYb'a YjbY'9fZLfi b[ i bX'a YjbY  
E i U]Z\_Uh]cbYb 'XYb'5bZcfXYfi b[ Yb'X]YgYf Dcgjh]cb"

I gYX'hc'`][ `][ \hmc f'fAgj a Å'UbX'g\ck 'ck 'k Y`hY'cv k ci 'X'gj ]hmc

A YjbY'XYfnYjh[ Y'Dcgjh]cb'Ug'''V]YhYha ]f'X]Y  
; YY[ Yb\Yjh]b YjbYa 'Ubgdfi Wg c``Yb'l a ZYX'ri  
UFVY]YhYbžk c'X]YYb[ Y'Ni gJa a YbUFVY]ha ]ha YjbYb  
? c``Y[ Yb'i bj Yfn]WHUF ]gži a j YfYjbVUFH': f]ghYb  
Yjbni \Uhmb"

I gYX'hc'X]gd'Umik \Uhg\_]`g'mci \U Y[ U]bYX'Zfc a mci 'WffYbh'cv

Ni gAhm]W'ni 'a YjbYb'J YfUbHk cfh]W\_YjhYb'Ug'''`UVY  
]W'U W: Åv][ \_YjhYb ]b'''Yfk cfVb"

I gYX'hc'g\ck 'UXXjh]cbU g\_]`g[ U]bYX'Zfc a mci f'WffYbh'cv'G\_]`gjh a Umibchibcfa U'mVYUggcVjhYX'k ]h mc f  
cWwdUh]cbU h]hY

A ch]j Uh]cbU 7 cj Yf @YrhYf ! 'G\_]`g

; fYY\_

; Yfa Ub

""]ghia YjbYA i hYfgdYWWY/XufOMYf \]bUi ggdfYWWY  
]W""

I gYX'hc'g\ck 'mc f'bUhj Y'Ub[ i U[YzUbX'Ugc'chYf'Ub[ i U[Yg]b'k \]W'mci '\U Y'Zi YbVh

=W j YfZOF YOMYf gMf [ i H? YbbHb]ggY]b""

I gYX'hc'g\ck 'bcb!bUhj Y'Ub[ i U[Yg]hUhmc 'Wb'Vta a i b]WYh'hc'U\][ \`Yj Y' ]b

=W 'WgjhY'gc'XY'; fi bX\_YbbHb]ggY]b""

I gYX'hc'g\ck 'bcb!bUhj Y'Ub[ i U[Yg]hUhmc 'Wb'Vta a i b]WYh'hc'Ub]bhYfa YX]UH`Yj Y' ]b

=W j YfZOF YOMYf "">UfY'9fZLfi b[ 'Ug""

I gYX'hc'g\ck 'mc f'Yl dYf]YbW]b'UWflU]b'Vi g]bYgg'UFYU

=W j YfZOF YOMYf [ i H? YbbHb]ggY]b""

I gYX'hc'g\ck 'k \UhVta di hYf'gZk UFY'mci 'Wb'i gY

5dd`]Wb]cb

A ch]j Uh]cbU '7 cj Yf '@YrhYf

=W'XYb\_YzXUgg]W'\_ØVf\_X]Y[ YY][ bYH? ca V]bUh]cb  
U g'''i bX'''j Yfzo[ Y'

I gYX'hc'g\ck '\ck 'VUUbWX'mci f'g\_]`g'UFY

Ui g[YnY]WbYH? ca a i b]\_Uh]cbg]A\][\_Y]Hb  
H\Y'UV] ]hmhc'g\UFY]bZcfa Uh]cb'k ]h'UbX'YI d'Ujb'H]b[ g'hc'mci f'Wt'YU[i Yg

gW'i ggZc[ YfbXYg8Yb\_Yb

H\Y'UV] ]hmhc'i bXYfg]UbX'UbX'YI d'Ujb'H]b[ g'ei ]W'UbX'YZZWij Ym

'c[ ]gWYg8Yb\_Yb

H\Y'UV] ]hmhc'Wbghfi WacbYgj]XYUg]b'UdfW\gYzk Y' Hci [ \Hci ha UbbYf

UbUnhgWY: A\][\_Y]Hb

H\Y'UV] ]hmhc'UggYgg'H]b[ g]b'XYhU`

\c\Ygn]UY? ca dYHbn

H\Y'UV] ]hmhc'a UbU[Y'UbX'Wta a i b]WbY'k ]h'Wt'YU[i Yg'YZZWij Ym

J Yf\UbXi b[ g[YgW]W

H\Y'UV] ]hmhc'Xc'Vi g]bYgg'XYUg'k ]h'ch'Yf'Wta dUb]Yg'YZZWij Ym

DfAgMoHUh]cbg]A\][\_Y]Hb

H\Y'UV] ]hmhc'Wta a i b]WbY']XYUg'YZZWij Ym]b'ZfcbhicZU`Uf[ Y' fci d

A ch]j Uh]cbU '7 cj Yf '@YrhYf ! '7`cg]b[

; fYY\_

; Yfa Ub

=W'V]b'cWa ch]j ]Yfh'i bX'ZfYi Ya ]W'U ZX]Yj ]YgM]H[ Y  
H\H][\_Y]H\Z]Y'a ]f'Y]bY'Dcg]H]cb ]b' \fYa 'I bHfbY'a Yb  
V]YHb'k ØfXY'

I gYX'k \Yb'Wcg]b[ 'hc'fY]HfUH'cbYfj]XYg]fY'hc'k cf'\_Zcf'k'Y'Wta dUbm

=W'g\YX]Y'bYi Yb'5i Z[UWb'#X]YgY'Dcg]H]cb'Ug  
k]`\_ca a YbY< YfU gZcfXYfi b[žU ZX]Y]W'a ]W'ZfYi Y'

I gYX'k \Yb'Wcg]b[ 'hc'']bhiUhk'Y'dcgjV] ]hmhcZ'Ub' ]bHfj ]Yk

=W'k ØfXY'a ]W'g\A f'ØVf'X]Y; YY[ Yb\Y]hZfYi Ybž  
k YjHfY'8YH]gri 'XYf'Dcg]H]cb'a ]h=\bYb'dYfg\ob' ]W'n  
WgdfWWYb"

5dd`]Wh]cb

A ch]j Uh]cbU'7cj Yf '@YrhYf

5bW] `Yf\UHb`G]Y'a Y]bYb '@WYbg`U Z'

GHubXUFX'Zcfa i `Ui gYX`hc H` H` Y`Ya d`cmYf`KUhmc f`fÅgi a Å#7J ]g]bW XYX'k ]H H` Y`Wj YF`YHhf

5i ZK i bgW'gYbXY]W'Δ bYb [ Yf bYX]Y'NY [ b]ggYj cb'''  
ri "

GHubXUfX'Zcfa i `Ui gYX'hc'hY`'hY'Ya d`cmYf'hUhmcI 'UFY'k ]`]b[ 'hc'dfcj ]XY'fYZY'fYbWg

NYi [ b ] qgY\_ QbbYb 'VY] " Ub[ YZcfXYfhk YfXYb"

I gYX`hc`hY` `hY`Ya d`cmYf`hUhmcI `UfY`k ]`]b[ `hc`dfcj ]XY`fYZf`YbWg`UbX`k \c`hYmVUb`Wt`bhU`hZcf`hYgY

: ØF Y]b J cfghY i b[g YgdfÅW g h Y]W'Ua " " " ni f  
J YfZØ i b[r "

I qYX'hc 'lbX]WbY'k \Yb'mci 'UFY'ZFY'Zcf'Ub 'lbhYfj ]Yk

J ]Y Yb '8 Ub\_ 'Zf =\ f =b hYf YgjY' =W k Øf XY'a JW gM f ØVYf  
XjY; YY[ Yb\ Y]hZfYi YbžG]Y]b 'Y]bYa 'dYf gØb]WYb  
; Ygdf AW 'XUj cb 'n i ØVYf nYi [ YbžXUbgg]W 'XYf [ YY][ bYH  
? UbXjXUhZf 'X]Ygj'DcgjH]cb V]b"6]hH' \_cbhU\_h]Yf Yb 'G]Y  
a JW 'dYf""

I q'YX'hc ] j Y'cbYfj dfYZ/fYX'VcbhUWXYhU'q'UbX'hc 'h'Ub\_ 'h'Y'Ya d'cmYf'Zcf'fYj ]Yk ]b] 'nci f'Udd' ]W'hcb

7

A  $\exists h \forall Y_1 \exists X \forall W Y_2$ ;  $f \not\in Y_2$

: cfa UžfWd]YbhjbUa Yj b bck b

7

A  $\text{h}^2\text{Yi}$   $\text{bX}^2\text{WYb}$ ;  $\text{f}\text{G}\text{Yb}$

: cfa Užk 1XY mij qYXž fWd1Ybh bck b

7

< cWUWh b[ q c ``

: cfa Užbchik ]XY mi qYXž fY\Wd] YbhbtJa Y' bck b

7

Yfn`WY; fØ»Y

=bZcfa UžVYhk YYb 'Vi qjbYagjdUfhbYfgk \c'UfY'cb Zfch bUa Y'hYfa q