

; fÒb`UbX'k À\`h.'l bUV\Àb[][_Y]h'cXYf Hfi a dg'9]bZ`i gg3

5a '%%"'A Àfn'&\$&) 'k À\`h'; fÒb`UbX'gY]b'DUf`Ua Ybh'!'Y]bY YbhgW\Y]XYbXY'Gh]a a Y'ZØf'I bUV\Àb[][_Y]h'i bX]bhYfbUh]cbU`Y'5i Za Yf_gUa _Y]h"

; fÒb`UbXz'8ÀbYa Uf_'!'5a '%%"'A Àfn'&\$&) 'gh]a a Yb'X]Y'6Øf[Yf; fÒb`UbXg'ØVYf'X]Y'6YgYhni b['XYg'fY[]cbU`Yb'DUf`Ua Ybhg'UV"8]Y'K U\`'\Uh'b]W\h'bi f'`c_U`Yz'gcbXYfb'Ui W\']bhYfbUh]cbU`Y6YXYi hi b[z']bgVYgcbXYfY'j cf'XYa '<]bhYf[fi bX'XYg'[Ygh]Y[YbYb\bhYfYggYg'XYf'I G5'i bhYf'XYf'DfÀg]XYbhgW\UZh'j cb'8cbU`X'Hfi a d"; fÒb`UbXz'X]Y'[fÒ» hY'\bgY`'XYf'K Y`h'a]h'Yhk U') *"*\$\$'9]bk c\bYfbz[Y\Òfh'k Y]hYf\]b'ni a '?Òb][fY]W\'8ÀbYa Uf_z'\Uh'YXcW\'gY]h%-+-'Y]bYb'5i hcbca]YghUhi gz'XYf'&\$\$-'Yfk Y]hYfh'k i fXY"

=bhYfbUh]cbU`Y 5i Za Yf_gUa _Y]h'i bX
F c \ ghc ZZY

8]Y'K U\`'ZÀ``h']b'Y]bY'_f]h]gW\Y'D\UgY'XYf'6Yn]Y\i b[Yb'ni 8ÀbYa Uf_ž'9i fcdU'i bX']bgVYgcbXYfY'XYb'l G5"'8cbU`X'Hfi a d \Uh'a Y\fZUW\'ÒZZYbh`]W\'VY_i bXYhž'XUgg'X]Y'l G5'; fÒb`UbX' Ui Z X]Y Y]bY cXYf UbXYfY K Y]gY Yfk YfVYb a ÒW hYb" 8]YgYg

\$\DY\fYggY \\Ab[h\Yb[\ta]h\X\Yb\fY]W\\U\h][Yb\Fc\ghc\Z] cf_ca a Yb

XYf \DY\fYggY \\notation ni gUa a Yb\tilde{x}\Ufi bh\Yf^2 \tilde{x}; Ug\tilde{x}\Iff \D\tilde{x}\N]b_i b\tilde{b}\Tilde{y}\tilde{y}\Tild

8]Y 'Ui hcbca Y 'F Y[]Yfi b['i bhYf'A]b]ghYfdfÀg]XYbh'A ÖhY'6ci fi d
9[YXY'VYhcbh'\]b[Y[Yb'XUg'GY`VghVYgh]a a i b[gfYWkh'XYf
; fÒb`ÀbXYf'i bX'ghY``h'_`Ufž'XUgg'X]Y' \(\pi\gY\)b]Wkh'ni a 'J Yf_Ui Z
ghY\h'' 9[YXY'_f]h]g]YfhY'Hfi a dg'Ÿi » Yfi b[Yb'U`g'a Ub[Y`bXYb
FYgdY_h'[Y[YbØVYf'XYf'[fÒb`ÀbX]gWkYb'8Ya c_fUh]Y'i bX
UddY``]YfhY'Ub'X]Y'Ni gUa a YbUfVY]h']bbYf\U`V'XYf
[fÒb`ÀbX]gWkYb'; YgY``gWkUZh''

Dc`]h]gWXY'@UbXgWXUZh'i bX'K U\`gmghYa

 $GYWX g`DUfhY]Yb`hfYhYb`ni f`K U\``UbžXUfi bhYf`X]Y`\pm i]h`5hUeUh][]]h flatzX]Y`Yfk Ufhi b[g[Ya Å»`Y]bY`ghUf_Y`Fc``Y`]a `DUf`Ua Ybh a c`XYb`k c``Yb"`8Yf`DUf`Ua YbhgVUi `]b`Bi i _`VYghY\h`Ui g`' % G]hnYbž`X]Y`U``Y`j]Yf`\J\fY`[Yk Å\`h`k YfXYb"`8]Y`U_hi Y``Y FY[]Yfi b[`gYhnh`g]W\`Ui g`XYb`DUfhY]Yb`\=5`i bX`G]i a i h`ni gUa a Ybž X]Y`VY]XY`X]Y`I bUV\Åb[][_Y]h; f`Ob`UbXg`i bhYfghØhnYb"`BUW\`XYb K U\`Yb`d`Ubh`G]i a i h`Y]b`I bUV\Åb[][_Y]hgfYZYfYbXi a /`DUfhY]WXYZ 9f]_`\J\bgYb`\c\ZZhž`]bbYf\U`V`XYf`b\W\ghYb`K U\`dYf]cXY`Y]bY 5Vgh]a a i b[`XUfØVYf`Xi fW\ZØ\fYb`ni `_ObbYb"$

; fÒb`UbX'Yf\À`h''À\f`]W\'Yhk U'('A]``]UfXYb'8Àb]gW\Y'?fcbYb'f)(\$
A]``]cbYb'9i fcŁ'j cb'8ÀbYa Uf_ž'k Ug'ZUgh'XYf'<À`ZhY'XYg'<Ui g\U`hg
Ybhgdf]W\h"'5i g'Y]bYa 'bYi Yb'; YgYhn'[Y\h'\Yfj cfž'XUgg'; fÒb`UbX
Ubcbma Y'i bX'Ui g`ÀbX]gW\Y'DUfhY]gdYbXYb'j YfVchYb'\Uhž'i a 'X]Y
dc`]h]gW\Y'\DhY[f]hÀh'ni 'gW\ØhnYb'i bX'Ui g`ÀbX]gW\Yb
9]bZi ggbU\a Yb'Ybh[Y[Ybni k]f_Yb"

 $8 \ Yf'K \ U\ ``b \ A\ Yf. \ '8 \]Y'K \ U\ ``c \ U`Y'gWX`]Y \ Yb'i \ a \ '&' \ 'I \ Yf \ YYi \ hgWX \ Yf'NY]hž'i \ b \ X'YfghY'j \ cf`Ài \ Z][\ Y'9f[\ YVb]ggY'k \ YfXYb']b'XYf$

BUWW h'Ui Z'XYb'%&"'A Àfn'Yfk UfhYh'''6YcVUWW hYf'Yfk UfhYbž'XUgg'XUg H\Ya U'I bUV\Àb[][_Y]h'i bUV\Àb[]['j ca 'K U\`Yf[YVb]g'Ui Z'X]Y $5[YbXU'[YgYhnh'k]fXž'XU'; fÒb`UbX'k Y]hYf\]b'Y]b'k]WWh][Yg [Ycdc`]h]gWW Yg'<math>\Rightarrow$ bhYfYggY'ZØf'X]Y'[`cVU`Yb'A ÀWW hY'XUfghY``h''

: Øf'k Y]hYfY' +b Zcfa Uh]cbYb'_ÒbbYb'X]Y'5fh]_Y`'j cb'Zf"XYž'a Yf_i f"XY'i bX'gb"Uh'VYgi W\h'k YfXYb"

8 Y hU]`g	
JcfZU``	K U\`Yb
Cfh	; fÒb`UbXž'8ÀbYa Uf_
EiY``Yb	• k k k "Zf"XY
	• k k k "a Yf_i f"XY
	• k k k "gb"Uh

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