

A YbhU`Y; Ygi bX\Y]h'j cb' i [YbX`]WXYb. 5`Ufa]YfYbXY 9bhk]W_`i b[Yb']a ': c_i g°

5a '%+"\$' "&\$&) 'ZUbX']b 'A Ø`\Y]a 'Ub 'XYf'Fi \f'Y]b
H\Ya YbhU['ni f'a YbhU`Yb'; Ygi bX\Y]h'j cb'?]bXYfb'i bX
\$\delta[\text{YbX}]W\Yb'ghUhh''] \text{VYf'\%\$\$: UW_f\deltaZhY'X]g_i h]YfhYb
\$< YfUi gZcfXYfi b[Yb'i bX'Df\deltaj Ybh]cbgghfUhY[]Yb"

5a '%+"'A Àfn'&\$&) 'ZUbX']b'A Ø`\Y]a 'Ub'XYf'Fi \f'XYf'H\Ya YbhU[
A YbhU`Y'; Ygi bX\Y]h'ZØf'?]bXYf'i bX'¾ [YbX`]W\Y 'ghUhhž
cf[Ub]g]Yfh']b'Ni gUa a YbUfVY]h'a]h'XYf'5_UXYa]Y' K c`ZgVi f["
, VYf'%\$\$': UW_fÀZhY'Ui g'XYb'6YfY]W\Yb'6]`Xi b[ž'6YfUhi b[ž
; Ygi bX\Y]h'i bX'DÀXU[c[]_'_Ua Yb'ni gUa a Ybž'i a 'ØVYf'X]Y
<YfUi gZcfXYfi b[Yb'i bX'@Ògi b[Yb']a '6YfY]W\'XYf'dgmW\]gW\Yb
; Ygi bX\Y]h'j cb'1 b[Yb'A YbgW\Yb'ni 'X]g_i h]YfYb"'Ni 'XYb
h\Ya Uh]gW\Yb'GW\k Yfdi b_hYb'[Y\OfhYb'X]Y'GYbg]V]`]g]Yfi b['ZØf
dgmW\]gW\Y'; Ygi bX\Y]h'gck]Y'XYf'5i ghUi gW\'ØVYf'YfZc`[fY]W\Y
DfUI]gdfc'Y_hY"

Ghuxhx]fy_hcf8Uj]X @Øb[Yba UWkhY XYi h]Wkžk]Y k]Wkh][X]Y a YbhU`Y; Ygi bX\Y]h ZØfXUg'K c\`VYZ]bXYb'j cb?]bXYfb'i bX \$\frac{1}{2}\text{In} YbX`]WkYb']gh" \div gY]bYa 'J cfhfU['VYhcbhY 'Yf'X]Y 'U_hi Y``Yb < YfUi gZcfXYfi b[YbžXYbYb'X]YgY' \div b[Yb'A YbgWkYb [Y[YbØVYfghY\YbžY]bgWk`]Y *\]Wk 'gWki `]gWkYb'8 fi \(\text{W_gž'GhfYgg}\) Xi fWk 'gcn]U`Y'A YX]Yb'i bX'ZUa]`]\(\delta\frac{1}{2}\delta\f

; Ygh]Y[YbY'6Y`Ughi b[Yb'Xi fWX'U_hi Y``Y 9fY][b]ggY $8 \ Yf??]b \ XYf[YgibX\Y]hg \ YYf]W \ h^* \& \&' \ `nY][h \ X \ Ugg`X]Y \ dgmW \]gW \ Y \ YgibX\ Y]h \ j \ cb \ $i \ [Yb \ X`]W \ Yb \ k \ A \ fYb \ X \ XYf`D \ Ub \ XYa \]Y \ Yf \ YV`]W \ [Y`]hhYb`\ Uh'' \ 9I \ hYfb \ Y`?f]g \ b \ k \]Y \ XYf`I \ _fU]b \ Y_f]Y[`i \ b \ X`X]Y \ ?`]a \ U_f]g \ Y' \ Yf \ A \ f]Y \ Y' b [ghY'i \ b \ X`Gcf[Yb'j]Y`Yf' \ i [Yb \ X`]W \ Yf'' \ 6 \ Ygcb \ XYfg`\ Yfj \ cfni \ YVYb \]ghz`X \ Ugg`) - I \ XYf`%*!`V]g`&)! \ A \ f][Yb \ i \ bhYf`gc[Yb \ Ub \ bhYf`?`]a \ UUb[gh``Y]XYb \ Z'k \ Ug`g]W \ b \ Y[Uh]j \ Ui \ Z`] \ fYb \ GW \ `UZ'i \ b \ X`] \ fY`Gh]a \ a \ i \ b[`Ui gk]f_h''$

: OfXYfi b[gUbgAhnY i bX =bbcj Uh]cbgdfc Y_hY

5i Z'XYa 'H\Ya YbhU['ghY``hY'8f"'? UfYb'? fUi gYž'DgmW\ch\YfUdYi h]b i bX'@Y]hYf]b 'XYf'DgmW\ch\YfUd]YUa Vi `Ubn'ZØf'?]bXYf'i bX \$\forall [YbX`]W\Y'Ub'XYf'Fi \f!I b]j Yfg]h\h'6c W\i a \tildot X\JY'6YXYi hi b[dgmW\]gW\Yf'; Ygi bX\Y]hgZ\OfXYfi b['j cf"'G]Y'Yf\\hi hYfhY\tildot X\Ugg dgmW\]gW\Y'Gh\Ofi b[Yb'c\tildot Zha U`g'VYfY]hg']a '?]bXYg!'i bX \$\forall [YbXU\hYf'VY[]bbYb'i bX'XU\Yf'Y\tildot ZYY_h]j Y Df\hij Ybh]cbga U\tildot bU\a Yb'Xf]b[YbX'bchk YbX]['g]bX"'9]b'6Y]gd]Y\`\]YfZ\Off [gh'XUg': cfgW\h b[gdfc'Y_h' I fVUb'A YbhU`'< YU\h\ 'XYg 8 Yi hgW\Yb'NYbhfi a g'Z\Off dgmW\]gW\Y'; Ygi bX\Y]h'f8 ND; \tildot \tildot X\Ug'\tildot Y\tildot BX \\ Ug'\tildot Y\tildot B\T \\ Y\tildot Y\

9VYbZU``g`kifXY`XUg`Dfc[fUaa`A]bXAUhhYfg`Ub`XYf`FYU`gWki`YAY``]b[\cZYf`GhfU»Y`jcf[YghY``h"`8]YgYg`Dfc[fUaa`nY][h`dcg]h]jY 5igk]f_ib[Yb`UiZ`XUg`Kc\`VYZ]bXYbž`XYb`FYgdY_h`ibX`X]Y Hc`YfUbn`ibhYf`GWXØ`Yfb"`8]Y`HY]`bY\aYbXYb`XYg`H\YaYbhU[g

; YgY``gW\UZh`]W\Y`JYfUbhk cfhi b['i bX i bhYfghØhnYbXY`Dfc[fUa a Y

8]Y'[YgY``gW\UZh`]W\Y'JYfUbhk cfhi b[']b'6Yni ['Ui Z'X]Y'dgmW\]gW\Y; Ygi bX\Y]h'j cb'?]bXYfb'i bX'\$ [YbX`]W\Yb']gh'f]Yg]["'8Ug
Dfc[fUa a '_]bXYfghUf_' BFK 'gW\UZh'7\UbW'b 'i bhYfghØhnh

b]h]Uh]j Ybž'X]Y'X]YgYg'N]Y`'j YfZc`[Yb"'8UfØVYf'\]bUi g'k]fX'VYhcbhž
k]Y'k]W\h]['Yg']ghž'XUgg'GW\i Ybž'9`hYfb'i bX': UW_f\AZhY']b'Y]bYf
[Ya Y]bgUa Yb'5bghfYb[i b['X]Y'a YbhU`Y'; Ygi bX\Y]h'j cb

\$ [YbX`]W\Yb'Z\OfXYfb"

Ni gUa a YbZUggYbX'nY][h'X]Y'J YfUbghU`hi b[']b'A Ø`\Y]a 'Ub'XYf
Fi \f'X]Y'Xf]b[YbXY'Bchk YbX][_Y]h'Y]bYg']bhYfX]gn]d`]bÀfYb
5bgUhnYg'ni f'I bhYfghØhni b['XYf'a YbhU`Yb'; Ygi bX\Y]h'j cb
?]bXYfb'i bX'\$! [YbX`]W\Yb"'\$'Y]bYf'NY]hž'XYf'j cb
<YfUi gZcfXYfi b[Yb'i bX'?f]gYb'[YdfÀ[h']ghž'[]`h'Ygž'dfÀj Ybh]j Y
A U\$ bU\a Yb'ni 'ghÀf_Yb'i bX'VYhfcZZYbYb'\$! [YbX`]W\Yb'X]Y
VYbOh][hY'I bhYfghØhni b['ni 'V]YhYb"

8 YhU]`g	
EiY``Yb	• k k k "a i Y`\Y]a !fi \f"XY
	• k k k "UYfnhYV`Uhh"XY

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z 'b!U["XY