

8]Y 'W Uch]gW Y 'J]g]cb 'j cb 'K YV' 'Y]bYf hY W b]gW Yb 'Ni $_i$ bZh

K UgʻVfUi WkhiygʻZØfʻY]bYʻC bʻ]bY!FYj cʻi h]cb3ʻK À\fYbXʻXUg ≯J\f`&\$&&`Ui ZhUi Wkhži]ghiy]bYʻbYi Yʻ6Yk Y[i b[i bhyfʻXYa 6UbbYfʻj cbʻK YV' ini Y]bYfʻXYfʻUa ʻa Y]ghYbʻX]g_i h]YfhYbʻ i bXʻUa ʻk Yb][ghYbʻj YfghUbXYbYbʻʻ?fÀZhYʻ]bʻXYf HYWkbc`c[]Yʻ[Yk cfXYb"ʻ5VYfʻYgʻ]ghʻbcWkʻ[Ufʻb]Wkhʻ_`Ufž k Y`WkYʻdfU_h]gWkYbʻDfcV`Ya YʻYgʻ`ÒgYbʻk]fXži a ʻHY]``XYg hÀ[`]WkYbʻ@YVYbgʻni ʻk YfXYb"ʻ¾XYʻ‡nYfUh]cbʻXYgʻK YVg VYfi \hʻUi ZʻbYi YbʻhYWkb]gWkYbʻA Ò[`]Wk_Y]hYb"ʻ6Y]ʻXYf YfghYbʻJ Yfg]cbʻk UfʻYgʻX]YʻA Ò[`]Wk_Y]hžʻnk]gWkYbʻghUh]gWkYb K YVgY]hYbʻni ʻbUj][]YfYb"A]hʻK YVʻ&"\$ʻk i fXYʻXUgʻK YVʻni Y]bYa ʻ]bhYfU_h]j YfYbʻ9WkhnY]ha YX]i a ʻi bXʻX]Yʻ6Ybi hnYf gYʻVghʻk i fXYbʻni a ʻ‡b\Uʻh"8]YgYʻ9bhk]W_`i b[YbžX]YʻUi Z / Ua d∧Y``]d/

K UgʻVfUi WkhiygʻZØfʻY]bYʻCb`]bY!FYjc`i h]cb3'K À\fYbX'XUgʻ\J\f &\$&&`Ui ZhUi Wkhžʻ]ghʻY]bYʻbYi Yʻ6Yk Y[i b[ˈi bhYfʻXYa '6UbbYfʻjcb K YV' 'ni 'Y]bYfʻXYfʻUa 'a Y]ghYbʻX]g_i h]YfhYbʻ i bX`Ua 'k Yb][ghYb j YfghUbXYbYbʻ '?fÀZhYʻ]bʻXYfʻHYWkbc`c[]Yʻ[Yk cfXYb"ʻ5VYfʻYgʻ]gh bcWk [Ufʻb]Wkh'_`Ufžʻk Y`WkYʻdfU_h]gWkYbʻDfcV`Ya YʻYgʻ`ÒgYbʻk]fXži a 'HY]``XYqʻhÀ[`]WkYbʻ@YVYbqʻni 'k YfXYb"

XYY #YfUh]cb XYg K YVg VYfi \h'Ui Z'bYi Yb hYWX b]gWXYb
A Ò[`]WX_Y]hYb "'6Y] XYf YfghYb 'J Yfg]cb 'k Uf 'Yg 'X]Y 'A Ò[`]WX_Y]hž
nk]gWX Yb 'ghUh]gWX Yb 'K YVgY]hYb 'ni 'bUj][]YfYb "'A]h 'K YV '& "\$
k i fXY 'XUg 'K YV 'ni 'Y]bYa ']bhYfU_h]j YfYb '9WX hnY]ha YX]i a 'i bX 'X]Y
6Ybi hnYf 'gY`Vgh'k i fXYb 'ni a '#\U'h"

8]YgY'9bhk]W_`i b[Ybž'X]Y'Ui Z'XYb'cZZYbYb'Dfchc_c``Yb'XYg

\$\text{\text{b}}\text

 $\begin{tabular}{ll} Ub[YV`]WXYb`JYfgWX]YVib[`jcb`KYV'`ni`Y]bYfXYnYbhfU`YfYbCb`]bY!KY`h3 \end{tabular}$

GY]bY?Yfb]bbcj Uh]cb'VYfi \h'Ui Z'XYa 'Xi fW. '6`cW_W\U]bg
Yfa Ò[`]W\hYb'j YfhY]`hYb'?cbgYbg' 'XYf': À\][_Y]hža]h'j Ò``][
: fYa XYb'j YfV]bX`]W\Y'JYfY]bVUfi b[Yb'ni 'hfYZZYbžc\bY'g]W\'Ui Z
Y]bYb'JYfa]hh'Yf'cXYf'Y]bY'nYbhfU`Y' \deltaghUbn'j Yf`UggYb'ni 'a ØggYb"
GhY``Yb'G]Y'g]W\'j cfž'[fc>Y'; fi ddYb'j cb'A YbgW\Yb'_ObbhYb
gdcbhUb'HfUbgU_h]cbYb'Xi fW\ZØ\fYb. 'K Y`W\Y'bYi Yb'K i bXYf'XYf
a YbgW\`]W\Yb'?ccfX]bUh]cb'_ObbhYb'a Ò[`]W\'gY]b3'8Yf'?fmdhc!
6cca `\Uh'X]YgY' \delta YY''Ui Z'; Y'X'ØVYfhfU[Ybž'UVYf'XUg'j c``Y
JYfgdfYW\Yb'j cb'K YV' 'VYfi \h'XUfUi Zž'X]Y'[`Y]W\Yb'hYW\b]gW\Yb
; fi bX`U[Yb'ni 'j Yfk YbXYbž'i a 'j]Y`Y'UbXYfY': cfa Yb'XYf
a YbgW\`]W\Yb'\deltahYfU_h]cb'ni 'j Yfa]hhY`b"

 $8]Y F Yhcf]_XUV]bhYfYbhgdf]WXhXifWXUigXYfNY]hgh]a a ib[a]h]YfYa A]gghfUiYb'[Y[YbØVYf'9`]hYb'ibX']bgh]hih]cbY``Yf'5ihcf]hÀh''5i »YfXYa 'gWXY]bhYg'Y]bY'Y]bZUWXY'5bhk cfh'UiZ'X]Y'A UWXh'jcb6]['HYWX'ni'[YVYb.'5i WX'G]Y'_ObbYb'X]Y'?cbhfc``Y'ØVYf'<math>\Rightarrow$ fY8 UhYb'ibX' \Rightarrow f'Cb`]bY!@YVYb'nifØW_Yf`Ub[Yb'ibX'[`Y]WXnY]h]['Y]bY7 \UbWY'VY_ca a Ybž'Ub'XYb'k U\bg]bb][Yb'; Yk]bbYb'jcb'6][HYWX'hY]`ni\UVYb''

 $9g']gh'Y]bY'j Yf`cW_YbXY'Hcb\O\Y"'5VYf'\]bhYf'XYf\\ 8YnYbhfU`]g]Yfi b[gf\Yhcf]_']gh'b]W\h'_`Ufž'k Y`W\Y'dfU_h]gW\Yb5bk YbXi b[Yb'X]Y'A YbgW\Yb'hUhg\AW\`]W\'j cb'XYb'U_hi Y``YbCb`]bY!8]YbghYb'UVVf]b[Yb'k ØfXYbž'X]Y'bUW\'k]Y'j cf'gY\f'VY`]YVhg]bX"'$

8]Y 'YfghYb '9fi dh]cbYb'[UV 'Yg']a 'XYnYbhfU']g]YfhYb':]bUbnk YgYbž VY] 'XYa '9]bnY`dYfgcbYb'c\bY'Nk]gWXYb\ÀbX`Yf'; YgWXÀZhY hÀh][Ybž'i bX 'VY] 'X][]hU`Yb'GUa a 'YfghØW_Ybž'X]Y'U`g'B: Hg'VY_Ubbh g]bX"'8]YgY'k Y]gYb'_Ui a 'XYb'K Y['ni 'UbXYfYb'Bi hni b[Yb"'9]b; fc»hY]`'XYf'5bn]Y\i b[g_fUZh'XYf'YfghYfYb'VYfi \h'Ui Z'XYf I a [Y\i b['XYf':]bUbnfY[i `]Yfi b[ž'k À\fYbX'X]Y'`YhnhYfY'X]Y 9bhgWXi `X][i b['ZØf'Y]bY'gdY_i `Uh]j Y'A Ub]Y'k Uf"

 $9g`[\]Vh`UbXYfY`;\ f\varnothing bXY\check{z}'j\ cfg]W\&h][\ `ni\ `gY]b"`8\]Y`]bgh]hi\ h]cbY``Yb$

GhØhnYb'k Y[fY]» Ybž'X]Y'X]Y'a YbgW\`]W\Y'A UggYb]bhYfU_h]cbfU\a Ybž'i bX'k Ug'V`Y]Vh'ØVf][3'K]Y'Y]b][Y'5i Zg]W\hgVY\ÒfXYb[Yk Ufbh'\UVYbž'VYfi\h'XUg'XYfnY]h][Y'GmghYa 'ni f'FY[i`]Yfi b[XYf':]bUbna Àf_hY'Ui Z'XYf'5i Zg]W\h'j cb'6Ub_Ybž'6fc_Yfb'i bX A Uf_hVY\ÒfXYb"

9gʻgh]a a hž'XUggʻX]YʻFY[i`]Yfi b[gVY\ÒfXYbʻbcWk'_Y]bYbʻK Y[Z]bXYbʻa ØggYbž'X]Yʻ\Yi h][Ybʻf]Yg][YbʻHYWkbc`c[]Yi bhYfbY\a YbY]bni gWkfÀb_Yb"'5VYfʻk ØfXYʻXUgʻJ YfgdfYWkYbʻj cbʻK YV'ʻʻʻU`Yg XYbʻ]bʻGcZhk UfYʻj YfUb_YfhYbʻFY[Y`bʻni 'ØVYf`UggYbž'X]YʻXi fWkj Yfa Y]bh`]Wk'_i [Y`g]WkYfYʻ?fmdhc[fUd\]Yʻg]WkYf[YghY``hʻk YfXYbʻXYbʻbcfa U`YbʻA YbgWkYbʻXUgʻ; YZØ\``[YVYbž'XUggʻ]\fYʻ\bhYfYggYb[Yk U\fh`k YfXYb3

8]YJYfk YbXi b['bYi Yf'X][]hU`Yf'K À\fi b[Ybži a 'X]Y'FÀXYf
X]YgYf'XYnYbhfU`]g]YfhYb'Cb`]bY!K Y`h'ni 'gW\a]YfYb' 'Y]b'DfcnYggž
XYf'U`g'Hc_Yb]g]Yfi b['VY_Ubbh']gh' '\ÀhhY'UbXYfY'5i gk]f_i b[Yb"
9g'k ØfXY'Cb`]bY!5_h]j]hÀhYb']b'A Àf_hY'j Yfk UbXY`bž']b'XYbYb'YXY

\$\text{b}YfU_h]cb'gc\Zcfh'a cbYhUf]g]Yfh'k]fX"'5`g'gc`W\Y'k ØfXY'Yg'Y]bY
: cfa 'XYf'<mdYfZ]bUbn]Yfi b['a]h'i bj cf\YfgY\VUfYb
5i gk]f_i b[Yb'Ui Z'XUg'Cb`]bY!JYf\U`hYb'XYf'A YbgW\Yb
XUfghY``Yb"'

8]Ygʻa U[ˈni a]bXYghʻUʻgʻY]bʻZU]fYfʻ5i g[Ub[gdi b_hʻZØfʻXYbʻ5i ZVUi Y]bYgʻ[YfYWXhYfYbʻGmghYa gʻYfgWXY]bYbžʻXUgʻXYa ʻ9]bnY`bYbʻX]Y ?cbhfc``Yʻ[]Vh"ʻ5VYfʻX]Yʻ9f[YVb]ggYʻj cbʻFYj c`i h]cbYbʻgh]a a Ybbcfa U`Yfk Y]gYʻb]WXhʻa]hʻXYfʻF\Yhcf]_ʻXYfʻA Uf_hY]bZØ\fi b[ØVYfY]b"

8]Y'l a [Y\i b['XYf'U`hYb'J Yfa]hh`Yf'ÒZZbYh'bcfa U`Yfk Y]gY'XYb K Y['ni 'Y]bYf'bYi Yb'; fi ddY'j cb'J Yfa]hh`Yfb' 'k]Y'Yg'XUg'YfghY K YV'hUh''8Yf'6`cW_WXU]b!HfUi a '\Uh'gY]bY'; fYbnYb'''9g']gh'b]WXh a Ò[`]WX ž'U``Yg']bY'cZZYbYž'j YfhY]`hY'8 UhYbVUb_'ni '`Y[Ybž']b XYf'U``Y'?bchYb'gcZcfh'U_hi U`]g]Yfh'k YfXYb'_ÒbbYbž'i a 'YXY'bYi Y; fi ddY'j cb'HfUbgU_h]cbYb'k]XYfni gd]Y[Y`b'''8 Ug'`Àggh'j]Y``F Ui a ZØf'bYi Y'J Yfa]hh`Yfž'X]Y'Ub'XYb'FÀbXYfb'\YfUbk UWXgYb'i bX'XUg J YfgdfYWXYb']b'dfU_h]qWXY'8]Ybgh`Y]ghi b[Yb'i a gYhnYb''

8]Y'k]`XYb'GdY_i`Uh]cbYbž'X]Y'XYb'?fmdhc!6cca 'VY[`Y]hYh'\UVYbž Yf]bbYfb'Ui W\'XUfUbž'XUgg'Y]bY'[YcfXbYhY'5i ZhY]`i b['XYf ; Yk]bbY'i bk U\fgW\Y]b`]W\']gh"'

 $8 \ Ug^{\prime}VYXYi \ hYh^b]Wh^z XUgg^{\prime}X]Y^nYbhfU^{\prime}HYWh^cc^c[]Y^{\prime}]bhYf^{\prime}K YV^{\prime} _Y]b^{\prime}fUX]_U^{\prime}Yg^{\prime}DchYbn]U^{\prime}\ Uh^ccXYf^{\prime}XUgg^{\prime} k]Y^{\prime}XYf^{\prime}YfghY^{\prime}8chWca! \\ 6cca ^{\prime\prime}XYf^{\prime}GdY_i ^{\prime\prime}Uh]cbgk U^{\prime\prime}b^{\prime\prime}cb^{\prime\prime}Yi hY^b]Wh^{\prime\prime}X]Y^bAWh^ghYb \\ k]Wh^{\prime}[Yb^{\prime}HYWh!I bhYfbY^a Yb^{\prime}[fØbXYb^{\prime}k]fX^{\prime\prime}6]g^{\prime}Ub[^{\prime}_Aa d^{\prime}Zb^{\prime}b^{\prime}XQfk cfhYf^{\prime}XYf^{\prime}bYi Yb^{\prime}HYWh^{\prime}bc^{\prime}c[]Y^{\prime}YxcWh^{\prime}bcWh^{\prime}a]h^{\prime}]bYf \\ 6YZØfk cfhYf^{\prime}XYf^{\prime}bYi Yb^{\prime}HYWh^{\prime}bc^{\prime}c[]Y^{\prime}YxcWh^{\prime}bcWh^{\prime}a]h^{\prime}]bYf \\ 6VYf[YcfXbYhYb^{\prime}<YfUi gZcfXYfi b[.^{\prime}dfUl]ghUi [^{\prime}]WhY \\ 5bk YbXi b[Yb^{\prime}ni Ybhk]W_Y^{\prime}bz^{\prime}X]Y^{\prime}XYb^{\prime}U^{\prime}hA^{\prime}[^{\prime}]Wh^{\prime}b^{\prime}5bgdfØWh^{\prime}b \\ j^{\prime}cb^{\prime}A]^{\prime}]cbYb^{\prime}j^{\prime}cb^{\prime}Bi hnYfb^{\prime}[YfYWh^{\prime}kYfXYb^{\prime\prime}8Ug^{\prime}]^{\prime}Wcb^{\prime}J^{\prime}U^{\prime}Ym \\ UfVY]hYh^{\prime}bUWh^{\prime}XYa^{\prime}Df]bn]dz^{\prime}XUgg^{\prime}Y]b^{\prime}VYggYfYf^{\prime}K^{\prime}Y[^{\prime}Ui ZhUi Wh^{\prime}b \\ k]fXz^{\prime}k^{\prime}Ybb^{\prime}GY^{\prime}[YbØ[YbX^{\prime}hYWh^{\prime}gY]b^{\prime}Yb^{\prime\prime}K^{\prime}YV!FYj^{\prime}C^{\prime}i^{\prime}h]cbYb \\ k^{\prime}UfYb^{\prime}[b^{\prime}XYf^{\prime}JYf[Ub[Yb^{\prime}Y]h^{\prime}Wh^{\prime}Uch]gWh^{\prime\prime}B^{\prime}YgYf^{\prime}g]Y^{\prime}h^{\prime}Ui gz^{\prime}U^{\prime}g \\ k^{\prime}QfXY^{\prime}Yf^{\prime}Wh^{\prime}Uch]gWh^{\prime}Yf^{\prime}B^{\prime}U^{\prime}g^{\prime}Y^{\prime}h^{\prime}U^{\prime}g^{\prime}Y^{\prime}b^{\prime\prime}b^{\prime\prime}$

f]WX UfX"k UhYfg4 Zh"Wca

EiY``Y.:]bUbW]U``H]a Yg

8 YhU]`g

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. '_fmd hc!bYk g"Uh