: `cf]XU'7cb[fYgga Ub'GdUf_g'Ci hfU[Y k]h\'Bi_]b['; UnU'FYa Uf_g°

: `cf]XU'7cb[fYgga Ub'FUbXm:]bY'gdUf_g'WcbhfcjYfgm'k]h\ fYa Uf_g'cb'; UnUžYW\c]b['K K =f\Yhcf]WUbX'][b]h]b[XYVUhYg'cb'j]c`YbWY"



: `cf]XUžI G5 !!=b h\Y k U_Y cZYgWU`Uh]b[hYbg]cbg`gi ffci bX]b[h\Y =gfUY`!<Ua Ug`WcbZ]WhžfYa Uf_g`a UXY`Vm: `cf]XU 7cb[fYgga Ub`FUbXm:]bY`\Uj Y`][b]hYX`U`k \]f`k]bX`cZ Wcbhfcj Yfgm": c``ck]b[`U`hfU[]Wg\cch]b[`]bW]XYbh`]bj c`j]b[hk c %k]g\`]bX]j]Xi U`g`]b`K Ug\]b[hcbž'8"7"ž:]bY g`Wca a Ybhg`Xi f]b[U`: cl `BYk g`]bhYfj]Yk `gh]ffYX`g][b]Z]WUbh`VUW_`Ug\"`Cb`>i bY`%%ž &\$&) ž`7ci bhYfDi bW\`fYdcfhYX`h\Uh`h\Y`U``Y[YX`g\cchYfž'9`]Ug FcXf][i Ynž`U`dfc!DU`Ygh]bY`UWh]j]ghž`k Ug`\YUfX`g\ci h]b[``: fYY DU`Ygh]bY `Xi f]b[`\]g`UffYgh"`FcXf][i Yn g`ghUhYa Ybhž` =X]X`]h`Zcf DU`Ygh]bYž`=X]X`]h`Zcf`; UnUž `Zi fh\Yf`]bZUa YX`gYbh]a Ybhg gi ffci bX]b[`Ub`U`fYUXmX]j]g]j Y`]ggi Y"

:]bYžk\c`fYWYbh`m`hcc_`cZZ]WY`]b`5df]``UZhYf`XYZYUh]b[`8YacWfUh

H\Y`WcbhYbh]ci g`Ybj]fcba Ybh`gi ffci bX]b[`:]bY g`fYa Uf_g`]g

6fcUXYf⁷cbhYlh^UbX^FYUWh]cbq

 $dUW_1ZmW_f^{h}W_g^{*}$

G\UVV]f'A chcfk U`Už'Zfca 'h\Y'7cU`]h]cb'cZ'Gci h\': `cf]XU'A i g`]a Cf[Ub]nUh]cbgžWcbXYa bYX:]bY g`ghUhYa Ybhg`Ug`][bcfUbh`UbX Uffc[UbhždUfh]W``Uf`m`\][\`][\h]b['U'fYa Uf_'k \YfY':]bY'U``i XYX hc; UnUbg'a Uffm]b['h\Y]f'Wci g]bg'Ug'U'Wf]h]ei Y'cZ'h\Y'dcdi `Uh]cb" Gi WX ']bWYbX]Ufm'Wca a Ybhg'UfY'cZhYb'WXUfUWhYf]nYX'Ug'fUW]ghž dYfdYhi Uh]b[`\Ufa Zi``ghYfYchmdYg'UVci h'Aig`]a g"':]bY']bg]ghg'\Y]gˈbchˈUbh]!Aig`]a 'Vih']g' Ubh]!Aig`]a !hYffcf]ghž 'WU]a]b['hc X]ZZYfYbh]UhY`VYhk YYb`dYUWYZi``Aig`]a g`UbX`h\cgY`\Y`U``Y[Yg dYfdYhi UhY hYffcf]qa "'<ck Yj Yfž'h\]q'X]qh]bWh]cb`\Uq'ZU]`YX hc

Zi fh\Yf`]fY`Zfca ``cWU``A i g`]a `UXj cWUhYg"

H\Y`f\Yhcf]WWcbh]biYX`hc`YqWU`UhY`k \Yb`:]bY`WcadUfYX`h\Y g]hi Uh]cb⁺hc[−]K cf[−]X⁺K Uf⁺=ž[−]gi [[Ygh]b[⁺h\Uh⁺i bWcbX]h]cbU⁺ gi ffYbXYf`g\ci`X`VY`h\Y`[cU`ž`g]a]`Uf`hc`\ck`h\Y`I"G"`UXXfYggYX h\Y'51]g'dckYfg"'H\]g'WcadUf]gcb'fU]gYX'YmYVfckgž'k]h\'Wf]h]Wg]bhYfdfYh]b[:]bY g'Wca a Ybhg'Ug'Ub']a d`]W]h'YbXcfgYa Ybh'cZ bi WYUf'UWh]cb'U[U]bgh'; UnU"':]bY``UhYf'X]qdi hYX'h\]q]bhYfdfYhUh]cbžUhhf]Vih]b[`]h`hc`k \Uh`\Y`fYZYffYX`hc`Uq`h\Y qcd\]qh]WUh]cbcZh\YAig`]a !hYffcfaYX]U" H\]gd\fUgYXfYk

7cbhfcj Yfg]U`7ca dUf]qcbg'UbX'FUWjqh FYa Uf_g

Zfca 7cb[fYgg"

 $x_q \in (K Y)^2 Z_c f^2 \in f^2 U q^* h^2 C_b f^2 g_c b U^2 B_q f^2 W^2 a U X Y$ WcbhfcjYfg]U``UggYfh]cbg`cb`AUm`&' ž`&\$&) ž`ghUh]b[``h\Uh DU`Ygh]b]Ub`W``hi fY`]g` Vi]`h`cb`j]c`YbWY" `<Y`Uf[i YX`h\Uh`h\Y WcbZ]WhWci`X'cb`m'VY'fYgc`jYX'h\fci[\'h\Y' Wcad`YhY gi ffYbXYf 'cZ']bX]j]Xi U`q`qi ddcfh]b['k \Uh'\Y'hYfa YX' A i q`]a hYffcf" <]g`fYa Uf_g`\Uj Y`XfUk b`k]XYgdfYUX`Wf]h]W]ga žk]h\`Yj Yb WcbqYfjUh]jY'Wca a YbhUhcf'HiW_Yf'7Uf`gcb'ei Ygh]cb]b['h\Y a cfU`]hm'VY\]bX'gi WX'ghUhYa Ybhg'UbX'WU``]b['Zcf':]bY g'YI di `g]cb a]ffcfYX'Vm'h\cgY'cZ'ch\Yf``Uk a U_Yfg"'GYbUhcf`@]bXgYm'; fU\Ua \Ug`gh]ffYX'h\Y'dch'Vm'ei Ygh]cb]b[`h\Y'Yh\]Wg'cZ'\]ghcf]WU``bi WYUf k UfZUfYž'\]bh]b[`h\Uh`=gfUY``g\ci `X`i gY'k \UhYj Yf`a YUbg bYWYggUfm'hc'Ybgi fY`]hg`gi fj]j U`"'G]a]`Uf`mž'ghUhYa Ybhg'Zfca =gfUY`]'dc`]h]WU``Z][i fYg'dfcdcg]b[`bi WYUf'cdh]cbg'U[U]bgh'; UnU \Uj Y'fY]bZcfWYX'h\Y'gYj Yf]hm'cZ'h\Y'g]hi Uh]cb"'Df]a Y'A]b]ghYf 6Yb'Ua]b'BYhUbmU\i 'gci [\h'hc'X]ghUbWY`=gfUY`'Zfca 'gi WX YI hfYa Y'a YUgi fYgž'Ya d\Ug]n]b['Wca a]ha Ybh'hc']bhYfbUh]cbU` `Uk "

5gʻh\Y`XYVUHY`Wcbh]biYgʻ]b`:`cf]XU`UbX`VYmcbXž'h\Y`7cU`]h]cb`cZ Gcih\`:`cf]XU`Aig`]a `Cf[Ub]nUh]cbg`ghf]jYg`hc`ZcghYf`]bhYfZU]h\ X]U`c[iY`UbX`dfcachY`ibXYfghUbX]b[`cZ`=g`Ua`Ua]Xgh`h\YgY WLU``Yb[]b[`h]aYg"`<ckYjYfž`:]bYg`f\Yhcf]WZiY`g`X]j]g]cbž dfcadh]b[`aUbm`hc`kcbXYf.`\ck`WUb`aYUb]b[Zi``WcbjYfgUh]cbg cWWff]b`Ub`Uhacgd\YfY`WLUf[YX`k]h\`giWL`]bZUaaUhcfm WcaaYbhg3

: `cf]XU g`dc`]h]WU```UbXgWUdY`gYYa g`hc`VY`Uh`U`WfcggfcUXgž`k \YfY]bWfbX]Ufm`f\Yhcf]WWUb``YUX`hc`g][b]Z]WUbh`WcbgYei YbWfgž'Vch\ `cWU``m`UbX`[`cVU``m"`5g`Wcbgh]hi Ybhg`k UhW\`WcgY`mž`:]bY g`Zi hi fY UbX`h\Y`VfcUXYf`]a d`]WUh]cbg`cZ`\]g`ghUhYa Ybhg`fYa U]b i bWffhU]b"`=g`h\YfY`fcca `Zcf`i bXYfghUbX]b[ž`cf`]g`h\]g`h\Y`bYk bcfa U``]b`dc`]h]WU``X]gWci fgY3

8 Y hU]`g	
Cfh	:`cf]XUžIG5
EiY``Yb	• k k k "Wci bhYfdi b WX "cf[
	• k k k "bYk g! ^ci fbU`cb`]bY"Wca

6Ygi WXYb'G]Y'i bg'Ui Z'a Y]b!k]Yb"bYh