

J58bYh'i bX'HY`hcb]_U. FYjc`i h]cbÀfY DUfhbYfgWXUZh'ghÀf_h'=cH']b'9i fcdU°



@]hUi Yb ! *8]Y K Y`h`XYf`HYW\bc`c[]Y `]gh`gh\bX][`]b `6Yk Y[i b[ž i bX `[YfUXY `Yhnh`k]fX `g]Y `j cb `gdUbbYbXYb `9bhk]W_`i b[Yb `]a 6YfY]W\ XYg \Rightarrow hYfbYh`cZ'H\]b[g`f\eq H\epsilon [Ydf\and h\overline Y\`Yg <][\`][\h`]gh`X]Y `ghfUhY[]gW\Y`DUfhbYfgW\UZh`nk]gW\Yb `J 58bYh 9i fcdY `i bX`HY`hcb]_U`BYhk cf_gž`X]Y `_Øfn`]W\ Xi fW\ `Y]b A Ya cfUbXi a `cZ'I bXYfghUbX]b[`f\and cI \epsilon VYg]Y[Y`h`k i fXY" @Ui h` H\Y`: Ugh`A cXY`n]Y`h`X]YgY`Ni gUa a YbUfVY]h`XUfUi Z`UV\Z`XUg`\epsilon H! HYW\\bc`c[]Y!^2 _cgmghYa `]b `9i fcdU`a U\rangle [YV`]W\ ni `gh\and f_Yb`i bX V]YhYh`XYb`A]h[`]YXYfb`j cb`J 58bYh`nU\`fY]W\Y`7\UbW\b`ni f\\div bc` Uh]cb"

HY`hcb]_U'BYhk cf_gž'Y]b'Ub[YgY\YbYg'I bhYfbY\a Yb'Ui g'@]hUi Ybž]gh'VY_Ubbh'ZØf'gY]bY'\cW\k Yfh][Yb' €H!@Ògi b[Yb"'8]Y

Zcfa U`]g]YfhY`?ccdYfUh]cb`nk]gWXYb`XYb`VY]XYb`Cf[Ub]gUh]cbYb k]fX`U`g`GWXf]hh`]b`X]Y`f]WXh][Y`F]WXhi b[`[YgY\Ybži a `XYb A]h[`]YXYfb'j cb'J 58bYh`XYb`Ni [Ub[`ni `ZcfhgWXf]hh`]WXYb nY``i `UfYb'i bX`XfU\h`cgYb'HYWXbc`c[]Yb'ni `Yf`Y]WXhYfb''` ∞ \b'j Ub B]'bUhhYbž`XYf`DfÀg]XYbh'j cb'J 58bYh'9i fcdYž`\YVh`\Yfj cfž'k]Y k]WXh][`X]YgY`DUfhbYfgWXUZh`ZØf`X]Y`6fUbWXY`]ghž'i bX`5bXf]i g D]`j Y`]gž`XYf`[`cVU`Y'JYf_Ui Zg`Y]hYf`VY]'HY`hcb]_Už`VYhcbh`X]Y `Ub['À\f][Y`Ni gUa a YbUfVY]h'j cb'ØVYf`ZØbZ'\J\fYbž`X]Y`X]YgYb GWXf]hh']b]h]]Yfh`\Uh"

$7 \setminus Ub W b \cdot Z \emptyset f \cdot X Y \cdot A h \cdot Y \cdot X Y f$

8 c W k Ug V Y X Y i h Y h X Ug '_cb_f Y h Z Ø f 'X] Y 'A] h [`] Y X Y f ' j c b ' J 5 8 b Y h 3 $8]Y^A]h[^]YXqVXUZh^[YhkY]h^ØVYfY]bY^V^c*Y^Ni[Yh]f][_Y]h$ hYWXbc`c[]qWXY`\bciUh]cbiibX'Yf\OZZbYh'JcfhY]`Yž'k]Y'Ni[Ub[ini XYb bYi YghYb €H! i bX BYhnk Yf_hYW bc`c[]Yb" VYf XUg A cI k]fX Y]bY D`UhhZcfa [YgWXUZZYbžX]Y Yg XYb A]h[`]YXYfbYfa Ò[`]W\hž'[Ya Y]bgUa 'Ub']bbcj Uh]j Yb'@Òqi b[Yb'ni 'UfVY]hYb i bX k Yfhj c``Yg': UW k]ggYb 'Ui gni hUi gW Yb" 8]YgY Ni gUa a YbUfVY]h']gh'YbhgW\Y]XYbXž'i a 'VfUbW\YbgdYn]Z]gW\Y $HfYbXg^{2}f\emptyset \ nY \ n' \ n' \ Yf_YbbYb^{i}bX^{i}XYb^{i}GYfj^{WY^{i}bUWX^{i}} \ n' \ n'$ jYfVYggYfbžkUgʻ]bʻY]bYfʻXmbUa]gWXYbʻHYWXbc`c[]Y!@UbXgWXUZh jcb [fc» Yf 6 Y X Y i hi b [']qh" 5 X '9 m Y '9 ` Y Whfc b] Wg 'V f]b [h 'Y g 'U i Z ' X Y b Di b_h 8 Uq 9b [U [Ya Ybh]b J 58 b Yh! ±]h | Uh | j Yb ž k | Y Yhk U $\U'V'A\f'WXYb'JYfUbghU'hib[Yb'ibX'Kcf_g\cdgž'ZOfXYfh]$: À\][_Y]hYb'i bX'i bhYfghØhnh'XUg']bX]j]Xi Y``Y'K UWXghi a ']a GY_hcf"

8]Y'Fc``Y'XYg'=cH']b'XYf'X][]hU`Yb HfUbgZcfa Uh]cb

8 c W k Ufi a ']gh'XUg' € H'gc'k]W k]['ZØf'X]Y'Ni _i b Zh3'8 Ug' € H
j YfV]b XYh'X]Y'd \ mg]gW Y'K Y`h'a]h'Y]b Yf'X][]hU`Yb'l a [YVi b[ž']b
XYf'j Yfb YhnhY'C V'Y_hY'''Ui W Ga Ufh'8 Yj]W g'[Yb Ub b h'''8 UhYb
gUa a Y`b'i b X'Ub U`mg]YfYb"'8]Yg'gd]Y`h'Y]b Y'Yb hgW Y]XYb XY'F c``Y
]b'XYf'X][]hU`Yb'HfUb gZc fa Uh]c b'XYf'K Y`hk]fhgW UZhž']b gVYgc b XYfY

[YdUUfh'a]h'HYW\bc`c[]Yb'k]Y'jYfhY]`hYb'GmghYaYb'ibX
_Øbgh`]W\Yf' ₺hY``][Ybn"'@Uih'XYf'9ifcdÀ]gW\Yb'?caa]gg]cb
kYfXYb'V]g'&\$&*'YhkU'(-'A]``]UfXYb' €H!; YfÀhY']a'9]bgUhn'gY]bž
kUg'Y]bY''À\f`]W\Y'KUW\ghiagfUhY'jcb'+i'VYXYihYh"

K]Y '_ObbhY 'X]Yg '_cb_fYh'Ui ggY\Yb3'BY\a Yb'k]f @UbXk]fhY. ' \pm H! GYbgcfYb']b': Y`XYfb'\Y`ZYb']\bYbž'dfÀn]gYfY'9bhgW\Y]Xi b[Yb'ni hfYZZYbž']bXYa 'g]Y 'fY`Yj UbhY'8 UhYb']b'9W\hnY]h'`]Y ZYfb"'5i » YfXYa bi hnYb'VYfY]hg'XfY]'J]YfhY`'XYf'Yi fcdÀ]gW\Yb'Cf[Ub]gUh]cbYb 7`ci X!HYW\bc`c[]Yb'i bX'j]Y`Y'd`UbYb' \pm bj Ygh]h]cbYb']b' \pm H! GmghYa Y"'8 UXi fW\'k]fX'b]W\h'bi f'X]Y'9ZZ]n]Ybn'[YghY][Yfhž gcbXYfb'Ui W\'XYf'9bYf[]Yj YfVfUi W\'[YgYb_hž'k Ug']b'NY]hYb'XYg ?`]a Uk UbXY`g']a a Yf'k]W\h][Yf'k]fX'"

8]Y '9i fcdÀ]gWXY '? ca a]gg]cb '\ Uh'Ui WX '_cb_fYhY 'A U» bU\ a Yb Y]b[Y`Y]hYhž'i a 'X]Y '9]b $Z\emptyset$ \ fi b['bYi Yf' \in H!HY WX bc`c[]Yb'ni VYgWX `Yi b][Yb"' \Rightarrow gVYgcb XYfY 'Xi fWX 'XUg' Dfc[fUa a '< cf]ncb 9i fcdY'k YfXYb' Dfc 'Y_hY'i bhYfghØhnhž'X]Y 'g]WX'Ui Z'XYnYbhfU`Y \Rightarrow hY``][Ybn'i bX'9X[Y'7ca di h]b['_cbnYbhf]YfYb"'Ni XYa'[]Vh'Yg \Rightarrow]h]Uh]j Yb'ni f'J YfVYggYfi b['XYf'7mVYfg]WXYf\Y]h'i bX'ni f: ÒfXYfi b['XYf' \Rightarrow bhYfcdYfUV]`]hÀh'j cb'D`UhhZcfa Yb"

8 Yf', VYf[Ub['ni 'K YV'("\$ž'[YdUUfh'a]h']bbcj Uh]j Yb']bXi ghf]Y``Yb 5bk YbXi b[Ybž'k]fX'Xi fW 'XUg'Yl dcbYbh]Y``Y'K UW ghi a j YfbYhnhYf'GmghYa Y'j cfUb[Yhf]YVYb"'8]YgY'9bhk]W_`i b[Yb _ÒbbhYb'b]W h'bi f'XYb'5``hU['XYf'A YbgW Yb'fYj c`i h]cb]YfYbž gcbXYfb'Ui W 'X]Y'5fVY]hgk Y]gY']b'j]Y`Yb'6fUbW Yb'[fi bX`Y[YbX j YfÀbXYfb"'8U``]Y[h'k]f_`]W 'k Ug'Ub°

8 Y hU]`g	
Cfh	@jhUi Yb
EiY``Yb	• k k k "h\ Y ZUgha c X Y "Wca
	kkk"UXYmY`YWhfcb]Wg"Wc"i_
	X][]hU`!ghfUhY[m"YWYi fcdU"Yi