

9fk UfhYb 'G]Y '_Y]b Y '? fmd hc fYb X]hYb ']a Gh]`'j cb '&\$&%ž'gU[h'8 Yl hYf]hm'7 Ud]hU`

8 Ugʻ < UbXYʻgj cʻi a YbʻXYgʻE i Ubh! < UbXYʻgi bhYfbY\a Ybgʻ]gh gY]hʻXYa ʻ5 Vghi fnʻj cbʻHYffUʻni fØW_[Y[Ub[Ybʻ5VYfʻGUZU]] gU[hYžʻXUggʻXYfʻDfY]gfØW_[Ub[VY]·?fmdhcUbʻU[YbʻUbʻg]W\
_Y]bYʻbY[Uh]j Ybʻ5i gk]f_i b[YbʻUi ZʻXUgʻI bhYfbY\a Ybʻ\UhhY
A]W\UYʻ`GUZU]ʻj cbʻ8 YI hYf]hmʻ7 Ud]hUʻʻ[`Ui VhžʻXUggʻYXY
a Uf_hbYi hfUʻYʻ?fmdhck À\fi b[gZ]fa UʻX]Yʻ5i gk]f_i b[Yb
a Ò[`]W\YfʻI a k À'ni b[Ybʻ]bʻXYfʻ6fUbW\YʻUVgW\ØhhYʻb`k]fX"

♣bʻY]bYa '♣bhYfj]Yk 'a]hʻ6ʻcW_k cf_gʻgU[hYʻYfžʻXUggʻXUgʻ]b
@cbXcbʻUbgAgg][Yʻ9][Yb\UbXYʻgi bhYfbY\a Ybʻa]hʻXYb
5i gk]f_i b[YbʻXYfʻ@]ei]X]hÀhʻ_cbZfcbh]Yfhik UfžʻX]YʻUi gʻXYa
A Uf_hʻ[YgUi[hkifXYžibXgY]bʻ; YgW\AZha i gghYʻg]W\
UbdUggYb'' ʻ9gʻk Ufʻ\Y_h]gW\"J]YʻYʻ8]b[Yʻ[]b[Ybʻ_Udi hhžj cb
XYbYbʻk]fʻb]Yʻ[YXUW\h`\AhhYbžʻXUggʻg]Y`_Udi hh'[Y\Yb
k ØfXYbžibX`k]fʻXUW\hYbʻ/ Ua d∧Y``]d/

- 8 Ug' < UbXY`gj c`i a Yb'XYg'E i Ubh! < UbXY`gi bhYfbY\a Ybg]gh'gY]h'XYa '5 Vghi fn'j cb'HYffU'ni fØW_[Y[Ub[Yb
- 5VYf'GUZU]'gU[hYž'XUgg'XYf'DfY]gfØW_[Ub['VY] ?fmdhcUb`U[Yb'Ub'g]WX'_Y]bY'bY[Uh]j Yb'5i gk]f_i b[Yb'Ui Z XUg'l bhYfbY\a Yb'\UhhY

A]WX UY``GUZU]'j cb'8 YI hYf]hm'7 Ud]hU``[`Ui Vhž'XUgg`YXY
a Uf_hbYi hfU`Y'?fmd hck À\fi b[gZ]fa U'X]Y'5i gk]f_i b[Yb
a Ò[`]WXYfI a k À`ni b[Yb']b'XYf'6fUbWXY'UVgWXØhhY`b'k]fX"

±b 'Y]bYa '±bhYfj]Yk 'a]h'6`c W_k cf_g 'gU[hY 'Yfž'XUgg 'XUg']b '@cbXcb UbgÀgg][Y '9][Yb\UbXY`gi bhYfbY\a Yb 'a]h'XYb '5i gk]f_i b[Yb 'XYf @]ei]X]hÀh'_cbZfcbh]Yfh'k Ufž'X]Y 'Ui g 'XYa 'A Uf_h'[YgUi [h'k i fXYž i bX'gY]b'; YgW\ÀZh'a i gghY'g]W\'UbdUggYb"

9g'k Uf'\Y_h]gW\"'J]Y`Y'8]b[Y'[]b[Yb'_Udi hhž'j cb'XYbYb'k]f'b]Y
[YXUW\h'\ÀhhYbž'XUgg'g]Y'_Udi hh'[Y\Yb'k ØfXYbž'i bX'k]f'XUW\hYb
b]W\hž'XUgg'X]YgY'?fYX]h[YVYf'gc'i bhYf[Y\Yb'k ØfXYbž'k]Y'g]Y'Yg
hUhYb"'K]f'XUW\hYb'b]W\hž'XUgg'H\fYY'5ffck g'7Ud]hU`'fl 57Ł'gc
]a d`cX]YfYb'k ØfXYž'k]Y'g]Y'Yg'[YhUb'\UVYb ž'gU[hY'Yf'i bX'VYnc[g]W\'Ui Z'XYb'Ni gUa a YbVfi W\'\cW_Uf\h][Yf'?fmdhc!?fYX]h[YVYfž
XYf'Xi fW\']\f'9b[U[Ya Ybh']b'XYa 'ghUf_'[Y\YVY`hYb'<YX[YZcbXg' 57'j Yfi fgUW\h'k i fXY"

 $\label{thm:condition} $$ 57 \check{z}'XUg']b'Y]bY'FY]Y'j' cb'dfcV'Ya Uh]gWXYb'? fmd hcdfc Y_hYb]bj Ygh]Yfh'k Uf\check{z}'[Yf]Yh'VY]'? fYX]hYb']b'< O\Y'j cb'a Y\fYfYb A]``]cbYb'8c``Uf']b'J Yfni [<math>\check{z}'U$ `g'X]Y'DfY]gY'ZØf'? fmd hcUb`U[Yb'bUWX XYa 'Ni gUa a YbVfi WX'j cb'HYffUI G8'fI GHŁ'Ua'- "'A U] Y]bVfUWXYb''5`g'XUg'I bhYfbY\a Yb'X]Y'? fYX]hfØW_nU\`i b[Yb'b]WXh `Y]ghYhYž'k UfYb'X]Y'? fYX]h[YVYf'XUni'[Ynk i b[Yb'5V\YVi b[Yb']b]\fYb'BYhnk Yf_Yb'Y]bZf]YfYbž'k Ug'k Y]h'j YfVfY]hYhY'6Ygcf[b]g ØVYf'X]Y'J YfbYhni b['XYf'6fUbWXY'Ui g`Ogh''

5`g`XYf`A U]`_Ua ž`XUW\hYb`U``Yž`XYf`<]a a Y``ghØfnh`Y]b`i bX k i gghYb`b]W\hž`cV`g]Y`bcW\`Y]b`J]YfhY`^U\f`XUVY]`gY]b`k ØfXYb"`8]Y @Yi hY`j Yf\]Y`hYb`g]W\`j YfÀb[gh][h ž`gU[hY`GUZU]"`5VYf`Yf`[`Ui Vhž XUgg`g]W\`XUg``Ub[gUa 'ÀbXYfhž`XU'X]Y`5b`Y[Yf`bUW\`i bX`bUW\ : U_hcfYb`Y]bdfY]gYbž`X]Y`V]g\Yf`]b`XYf`@ Zh``U[Yb"

8Yf?f]Y[']b'XYf'I_fU]bY'[Y\h`Y]XYf'kY]hYfž'UVYf'Yf']gh'Yhnh'Y]bY VY_UbbhY'; fò»Y"'8Ug'AU_fciaZY`X']gh'Y]bY'j]Y`'ibVY_UbbhYfY ; fò»Yž'XU'Yg'gc'j]Y`'&Z'Uh]cb'k]Y'k]f'Yf`YVh'ibX'Yg']aaYf'bcW ØVYf`YVh''8]Y'@YihY'VY[]bbYb'g]W\'U`gc'k]YXYf'a]h'XYf FY]bjYgh]h]cb']b'?fmdhc'jYfhfUih'niaUW\Yb"

DfU_h]gWXY_i fnZf]gh][Y 9fk Ufhi b[Yb

; YgW\]W_`]W_Y]h\(\tilde{Z}\)Y ? fmd hc k \(\tilde{A}\) fi \(b\) [Yb 'nk]gW\ Yb '\ Ub XY`hY '\&\) A]``]UfXYb 'i \(bX'\)('A]``]UfXYb '8 c``Uf 'ni '6Y[]bb 'XYg'\\J\\fYg'\]g ni a '5\\ghi fn'j cb 'H\YffU'\Y]b\Y'[i h\Y'\D\Yf\Zcfa Ub\\Y'''\G\Y]h\X\Ya ']gh'\Yg fi \\]['[Yk cfX\Yb''

K]f'ZØ\fYb'U`[cf]h\a]gW\Y'A Uf_Yh]b[ghfUhY[]Yb'Xi fW\ž'k Ug VYXYi hYhž'XUgg'k]f'j]Y`'Jc`i a Yb'Yfn]Y`Yb'''K]f'\UVYb'ØVYf'Y]bY 6]``]cb'[Y\UbXY`h'Oxc``UfgQj Yf[Ub[YbYg'\\f''K]f'Yfb\\fYb'i bg j ca 'Jc`i a Ybž'i bX'XU\Yf']gh'Y]b'FØW_[Ub['XYg'Jc`i a Ybg'_Y]bY [i hY'BUW\f]W\h'ZØf'i bg ž'gU[hY'GUZU]ž'XYf'XYb'A Uf_hUVgW\k i b[U`g'XYb' Xf]hhYb'k]f_`]W\'[fc\Yb'6\AfYba Uf_h'VYnY]W\bYhY''

5i » YfXYa '\ Uh'XYf'Ni gUa a YbVfi W\ 'XYf'? fmdhc!? fYX]h[YVYf'b]W\ h bi f'X]Y'5b`Y[Yfgh]a a i b['VYY]bhfÀW\ h][hz'gcbXYfb'Ui W\ 'XUg < UbXY`gj c`i a Yb'Ub'XYb'[fc» Yb'? fmdhc!6 ÒfgYb'VYY]bhfÀW\ h][h"

8]Y'[ihY'BUW\f]W\h'ØVYf'ibg']ghž'XUgg'k]fž'XU'k]faUf_hbYihfU`'g]bXž'b]W\h'XYa 'DfY]g'jcb?fmdhck À\fib[gUb`U[Yb'Uig[YgYhnh'g]bX"'8YfDfY]gjYfZU``'Ub'g]W\kUf'U`gc'b]W\h'gW\`YW\h'ZØfibg ž'ZØ[hY'Yf'\]bni"

9]bY'a Uf_hbYi hfU`Y'<UbXY`gghfUhY[]Y']a d`Ya Ybh]Yfh'X]Y 5i gZØ\fi b['j cb'@cb[!'i bX'G\cfh!Dcg]h]cbYb"'Gc`W\Y'HfUXYg a UW\Yb'XUg'6YghY'Ui g'XYf'8]j Yfg]Z]_Uh]cbž'X]Y'ni f'5Vg]W\Yfi b[[Y[Yb'A Uf_hfØW_[Àb[Y'j Yfk YbXYh'k]fX"

GUZU]`\à`h`Yg`ZØf`b]W\h'j YfbØbZh][ž`\c\Y`9fk Ufhi b[Yb`Ub`XUg <UbXY`gj c`i a Yb`ni `\Y[Yb`i bX`XYb`9bh\i g]Uga i g`XYg 6i ``Yb`Ui Zg`&\$&%'ni `[Yb]Y» Yb"'

@YhnhYg`\\f`k Uf`gc`Y]b`[fc»Ufh][Yg`\\f`ZØf`U``Y"`I bgYfY 9fk Ufhi b[Yb`g]bX`Yhnh`]f[YbXk]Y`i bj YfbØbZh]["`5VYf`]b`6Yni [Ui Z`i bgYfY`FYbX]hYb`g]bX`g]Y`VYggYf`U`g`&\$%-"`G]Y`g]bX k U\fgW\Y]b`]W\`VYggYf`U`g`5bZUb[`&\$&\$"`5`gc`[Y\h`Yg`i bg`[i h ž gU[hY`Yfž`c\bY`NU\`Yb`ni `bYbbYb"`

GY]bYf'AY]bib['bUW\'\Uh'Yg'8YIhYf]hm'[YgW\UZZhž']b'X]YgYf Dcg]h]cb'ni'gY]bž']bXYa'Yg'gc`]XY'HfUXYg'Uig[YZØ\fh'\Uhž'X]Y'UiZ YW\hYa'5`d\U'VUg]YfYbž'UbghUhh'a]h'[Y\YVY`hYb'@cb[!Dcg]h]cbYb ZYghnighYW_Yb"

*XYfž'XYf'bi f``cb['[Y\h'cXYf'Y]bYb'?cfV'j c``Yf'A ØbnYb'a UW\hžk]fX'Yg']a 'A ca Ybh'b]W\h'hÒhYb"'@Yi hY'k]Y'k]fž'X]Y'a Uf_hbYi hfU`g]bX'cXYf'YW\hYg'5`d\U'\UVYbž'kYfXYb']b'CfXbi b['gY]b ž'gU[hYYf"

8 YI hYf]hm'hY]`hY'6`cW_k cf_g'`YhnhYg'\\fa]h\'X\Ugg'Yg'gY]bY A]hUfVY]hYfnU\``j YfXcddY`b'k c``Y\'Z'UVYf'Yg'\Uh'X]YgYg'N]Y``'Yhnh [Y\\AbXYfh"'8 Ug'I bhYfbY\a Yb\'X\Ug'XYfnY]h'\%+'A]hUfVY]hYf'n\\`h\\`d`\Ubh\'Z``\Ub[gUa 'Y]bni ghY``Yb"'

K]f'g]bX'<UfXWcfY! ₺[Yb]Yi fY'cXYf'ei Ubh]hUh]j Y'HfUXYf"

K À\fYbX'k]f'U`gc'bcW\'k UW\gYbž'd`UbYb'k]f'X]YgYg'\$J\f'_Y]bY

J YfXcdd`i b[ž'gU[hY'Yf"

8]Y'JYf_bØdZib['jcb'HfUX:]'a]h'?fmdhc'_ÒbbhY Y]bY'[ihY'KYhhY'XUfghY``Yb

 $6 \, \text{Ui } \, \backslash \, Y \, \text{ffYb } \, \underline{\ \ } \, \dot{\text{ObbhYb}} \, \underline{\ \ \ } \, \underline{\text{A }} \, \, \underline{\text{U-hi }} \, \, Y \, \underline{\ \ \ } \, Y \, \text{bhY hY } \, \underline{\text{A }} \, \underline{\text{Uf_hi }} \, \, \underline{\text{a }} \, \, \underline{\text{ZY }} \, \underline{\text{X }} \, \underline{\text{Y }} \, \underline{\text{Jb }} \, \underline{\text{Y }} \, \underline{\text{Y }} \, \underline{\text{M }} \, \underline{\text{hY }} \, \underline{\text{hY }} \, \underline{\text{A }} \, \underline{\text{Uf_hi }} \, \underline{\text{a }} \, \, \underline{\text{ZY }} \, \underline{\text{X }} \, \underline{\text{Y }} \, \underline{\text{Jb }} \, \underline{\text{Y }} \, \underline{\text{Y }} \, \underline{\text{M }} \, \underline{\text{hY }} \, \underline{\text{M }} \, \underline{\text{hY }} \, \underline{\text{M }} \,$

5b[Yg]Wkhg`XYf`5fh'jcb`: Y\`Yfbž`X]Y`]b`XYb``YhnhYb`AcbUhYb Ui Z[YhfYhYb`g]bXž`XYb_Yb`X]Y`@Yi hYž`XUgg`X]Y`FY[i`]Yfi b[`ghÀf_YfkYfXYb`k]fXž`kUg`VYXYi hYhž`XUgg`HfUX:]!Gd]Y`Yfž`X]Y`VYfY]hg`ØVYfU``Y`@]nYbnYb`jYfZØ[Ybž`[ih`dcg]h]cb]Yfh`g]bXž`kYbb`g]Y`ØVYf`X]Y HYWkbc`c[]Y`jYfZØ[Ybž`gU[hY`Yf"`

K Ybb']W\'[YfUXY'\dag Yghcf'V]b'i bX'Y]b'[i hYg'HYUa 'gY\Yž'XUg Yhk Ug']b'XYf'\dag ZfUghfi _hi f'Ui ZVUi h'cXYf'HfUX:]'a]h'XYf'?fmdhck Y`h j YfV]bXYhž'XYb_Y']W\'Z'XUgg'XUg'Y]bY'[i hY'K YhhY']gh"

: Øf`X]Y`Ni _i bZh`Yfk UfhYh`GUZU]ž`XUgg`?fmdhc!?fYX]h[YVYf ØVYfXYb_Ybž'k]Y`g]Y`a]h`F]g]_Yb`i a [Y\Ybž'i bX`g]W\`a Y\f ; YXUb_Yb`XUfØVYf`a UW\Ybž'Ub`k Yb`g]Y`?fYX]hY`j Yf[YVYbž'XU`XYf FUi a `b]W\h`qc`Ybhk]W_Y`h`k Ufž'k]Y`Yf`\ÀhhY`qY]b`qc``Yb"

G]Y'k YfXYb'j]Y``gW\ØW\hYfbYf`gY]bž'i bhYfVYg]W\YfhY`cXYf j Yf`Àb[YfhY'?fYX]hY'ni 'a UW\Yb"'| bX'g]Y'a ØggYb'Y]bZUW\'_`Ø[Yf k YfXYb"

9f'j Yfa i hYhž'XUgg'XYf'A Uf_h'ZØf'Y]bY'K Y]`Y'hfÀ[Y'gY]b'k]fX'i bXg]W\']b'UVgY\VUfYf'NY]h'b]W\h'ÀbXYfb'k]fX"

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