

JYfk]ffib['ia'' \$'_a#\!6YgW\fÀb_ib[nk]gW\Yb'6c`hcZh'ibX'9g[fig

8]Y'HYa dc!' \$!FY[Y``Ui Z'XYf'? %\$' `VY]'9g[fi g'gcf[h'ZØf I ba i h'i bhYf'5i hcZU\fYfb"'; fi bX'g]bX'VYgW\AX][hY 6Ub_YhhY"

GY]h'9bXY'\$ b]'[]'h'Ui Z'XYf'? %\$' 'nk]gWXYb'6c`hcZh'i bX

9g[fi ga Ø\`Y'Y]bY'bYi Y'; YgWXk]bX][_Y]hgVY[fYbni b['j cb'' \$
_a #\ž'X]Y'VY]'j]Y`Yb'J Yf_Y\fghY]`bY\a Yfb'Ui Z'I bj YfghÀbXb]g

ghÒ» h"'5i hcZU\fYf'i bX'DUggUbhYb'ZfU[Yb'g]WXž'k Ufi a 'X]YgY

A U» bU\a Y'Yf[f]ZZYb'k i fXY"'9]b'\Ài Z]['[YÀi » YfhYg'I bVY\U[Yb

VYgWXfY]Vh'X]Y'G]hi Uh]cb.' 9g'[]Vh'XcWX'ØVYf\Ui dh'_Y]bYb

Yf_YbbVUfYb'; fi bX'ZØf'X]YgY'A U» bU\a Y" 'Gc`WXY'?ca a YbhUfY

g]bX']b'gcn]U`Yb'BYhnk Yf_Yb'k Y]h'j YfVfY]hYh''

9]b'Bi hnYf'ghY``hY']b'Y]bYa': cfi a 'X]Y': fU[Yž'k Ug'Yg'a]h'XYb a Yf_k ØfX][Yb'' \$Yf!GW\]`XYfb']b'9g[fi g 'Ui Z'g]W\'\UVY"'9f j Yfk]Yg'Ui Z'XUg'nY]hk Y]`][Y'JYfgW\k]bXYb'XYf'GW\]`XYf'i bX Yf_i bX][hY'g]W\ž'cV'X]YgY'a Ò[`]W\Yfk Y]gY'[Yghc\`Yb'k cfXYb gY]Yb'cXYf'cV'X]Y'GhfU» YbVY\ÒfXY'b]W\h'k ØgghYž'k Ug'g]Y'hi Y''?cb_fYh'ghY``hY'Yf'ZYgh' 8]Y'GhfU» Y'k i fXY'j cf'j]Yf'\J\fYb YfbYi Yfh''\J\ž'X]Y'6Ub_YhhYb'g]bX'UV[Ygi b_Ybž'UVYf'X]Y'GhfU» Y'Ub g]W\']gh'hcdd"'?Y]b'GW\`U[`cW\''b]I'

9f_`Afi b[XYfJYf_Y\fgVY\OfXY

5i Z'BUW\ZfU[Y'j cb'AYX]Ybj YfhfYhYfb'[UV'X]Y'DfYggYghY``Y'XYg @UbXYgVYhf]YVg'GhfU» YbVUi 'i bX'JYf_Y\f'f@6JŁ'GW\`Ygk][! < c`ghY]b'VY_Ubbhž'XUgg'X]Y'; YgW\k]bX][_Y]h'Ui Z[fi bX'ghUf_Yf6Ub_YhhVYgW\ÀX][i b[Yb'Ui g'; fØbXYb'XYf'JYf_Y\fgg]W\Yf\Y]h [YgYb_h'k i fXY"'8YfnY]h']gh'i b_`Ufž'k]Y'`Ub[Y'X]YgY'AU» bU\aY

 $VYghY \setminus Yb \cdot V \cdot Y]Vh'' \cdot 8]Y \cdot 6Y \setminus YVi \cdot b [\cdot XYg \cdot GW \cdot UXYbg \cdot VYZ]b XYh \cdot g]W \cdot]b \\ XYf \cdot D \cdot Ubi \cdot b [\cdot " \cdot 8 YhU] \cdot g \cdot _ObbYb \cdot Ui \cdot Z[\cdot fi \cdot b X \cdot XYg \cdot Zf\emptyset \setminus Yb \\ D \cdot Ubi \cdot b [\cdot gghUX]i \cdot a \cdot g \cdot b]W \cdot h \cdot [\cdot YbUbbh \cdot k \cdot YfXYb \cdot \check{z} \cdot Yf _ \cdot \mathring{A}fhY \cdot X]Y \\ DfYggYghY \cdot `Y''$

8 Yf'6Øf[Yfa Y]ghYf'j cb'9g[fi gž'< YbXf]_'@UggYb!DYhYfgYbž'g]Y\h
a Ò[`]W\Yfk Y]gY'Y]bYb'Ni gUa a Yb\Ub['a]h'XYb
9fbYi Yfi b[gUfVY]hYb'Ub'XYf'@\%'nk]gW\Yb'GhYfi d'i bX
6fi bg\c`a ž'X]Y'j cb'5i [i gh'\\$\\$\' V]g'9bXY'5df]`'\\$\\$\((\) ghUhhZ]bXYb''
K À\fYbX'X]YgYf'NY]h'[UV'Yg'Y]bY'Ui g[YgW\]`XYfhY'I a 'Y]hi b[ž'X]Y
j cb'GhYfi d'ØVYf'X]Y'@\((, 'V)g'bUW\'GhY]bVYf[_]fW\Y'i bX'j cb'Xcfh
k Y]hYf'ØVYf'X]Y'6\%-- 'ni f'@\) & ZØ\fhY'' 8]Y a Y]ghYb
JYf_Y\fghY]`bY\a Yf'][bcf]YfhYb'X]YgY'I a 'Y]hi b['YXcW\'i bX
VYj cfni [hYb'X]Y'_ØfnYfY'GhfYW_Y'ØVYf'9g[fi g'i bX'6c'hcZh'bUW\
GhYfi d ž'gc'@UggYb!DYhYfgYb''8]Yg'ZØ\fY'Ui Z'XYa 'VYhfYZZYbXYb
GhfYW_YbUVgW\b]hh'ni 'Y]bYa 'Yf\O\hYb'JYf_Y\fgUi Z_ca a Ybž'k Ug
X]Y'6Ub_YhhY'ØVYf'UghYh'\UVY''

Ni gàhn`]W\ k]fX XUgʻhYa dcfàfY J YfgW\ k]bXYb XYf'' \$Yf!GW\]`XYf h\ Ya Uh]g]Yfh" 8 Yf 6 Øf[Yfa Y]ghYf'\ UhhY XYb '? fY]g XUfi a '[YVYhYbž Ui Z'X]YgYf GhfY W_Y '_Y]bY '; YgW\ k]bX][_Y]hga Yggi b[Yb Xi fW\ ni ZØ\ fYb" 8 Ybbc W\ ž'k]Y 'Yf 'VYf]W\ hYhYž 'ZUbX 'Y]bY 'A Yggi b[ghUhhž i bX '_i fn XUfUi Z'j YfgW\ k UbXYb 'X]Y 'GW\]`XYf" '9g']gh a Ò[`]W\ ž XUgg 'Ya UbXž XYf XUXi fW\ [YV`]hnh 'k i fXYž X]Y 'GW\]`XYf Ybhk YbXYh'\ Uhž i a 'Y]b '6i » [Y`X cXYf 'GW\`]a a YfYg 'ni 'j Yfa Y]XYb" Gc Zc fh'k i fXYb 'bYi Y 'GW\]`XYf 'Ui g'; fØbXYb 'XYf 'J Yf_Y\fgg]W\ Yf\Y]h Ui Z[YghY``h ž 'ZØ[hY 'Yf'\]bni "

 $\label{thm:converse} Hfchn: XYg: U^{(1)} Ya Y]bYb: Ibaihg: []VhYg: UiW. Nigdfi W. ZØf: X]Y; YgW.k]bX][_Y]hgfYXin]Yfib["'9]bY: U\ffUXZU\fYf]b: Ai » YfhYž XUgg: g]Y: g]W. a]h: XYf: FYXin]Yfib[: XYf: < OW. gh[: YgW.k]bX][_Y]h: UiZ XYf: GhfU » Y: g]W. YfYf: ZØ\ `Yž: XU: Yg:]b: XYf:; Y[: YbX:_Y]bYb: FUXk: Y[: []Vh": <math>\mbox{$\times$$ hnh: ZU\fYb: X]Y: 5ihcg: b]W.h: a Y\f: a]h: %$$: _a $$\mbox{$\times$$ Los a} $$$

 $8\,]Y\,G]hi\,\,Uh]c\,b\,'V\,'Y\,]V\,h\,'Ub\,[\,\,Ygd\,Ub\,b\,h\check{z}\,'X\,U\,'g]W\lambda\,'X\,]Y\,'8\,]g_i\,\,gg]c\,b\,'\emptyset V\,Y\,f\,'X\,]Y\,'B\,'g$

8 Y hU]`c

6Ygi WXYb G]Y i bg Ui Z b!U["XY