

## I bk YhhYfk Ufbi b[Yb']b'6UmYfb. GhUf\_fY[Yb'i bX'; Yk]hhYf']b'G]W\h°

±0.6UmYfb:\UVYb:\YZh][Y; Yk]hhYf:XUg:K YhhYf[YgWXY\YbVYY]bZigghž:kcVY]:X]Y:IbkYhhYfZfcbh;jcf:U``Ya:CVYfVUmYfb:ibXGW.kUVYb:hfUZ''6Øf[Yf:ibX:6Y\ÒfXYb:g]bX:]b:5`Ufa VYfY]hgWXUZhžkÀ\fYbX:XYf:8YihgWXY:KYhhYfX]Ybgh:f8K8Ł;jYfgWX]YXYbYKUfbghiZYb:Uig[Y[YVYb:\Uhž:X]Y:UiZ:YIhfYaYKYhhYfVYXfc\ib[Yb:\]bkY]gYb"

8]Y'K YhhYf'U[Y'gd]hnhY'g]W\'Ua '5VYbX'XYg'("'GYdhYa VYf'&\$&(ni "'Jcf'U``Ya ']b'XYb'@UbX\_fY]gYb'fi bX'i a 'A ØbW\Yb'k i fXY'Y]b gW\k YfYg'; Yk]hhYf'[Ya Y`XYhž'XUg'a]h']bhYbg]j Ya 'GhUf\_fY[Yb'i bXdchYbn]Y``'[YZÀ\f`]W\Ya '<U[Y``Y]b\Yf[Y\h"'Ni 'XYb'VYhfcZZYbYb FY[]cbYb'nÀ\`Yb'i bhYf'UbXYfYa '@UbXgVYf['Ua '@YW\ž'GhUfbVYf[ž':ØfghYbZY`XVfi W\_'gck]Y'XYf'[YgUa hY'FUi a 'A ØbW\Yb"'8]Y'fchY K Ufbghi ZY'g][bU`]g]Yfhž'XUgg'a]h'B]YXYfgW\`A[Yb'j cb'V]g'ni '(\$@]hYfb'dfc'Ei UXfUha YhYf']b'Y]bYf'\_i fnYb'NY]hgdUbbY'ni 'fYW\bYb]gh"

## GWXk YfY I bk YhhYfk Ufbi b[Yb U\_h]j

8]Y'K YhhYfj cf\YfgU[Yb'XYg'8K 8'nY][Ybž'XUgg'g]W\'X]Y
; Yk]hhYfZfcbh'fUgW\'ØVYf'X]Y'VUmYf]gW\Yb'FY[]cbYb'j Yf`U[Yfh"Ni
XYb'bYi YghYb'K Ufbi b[Yb'[Y\ÒfYb'i bhYf'UbXYfYa 'X]Y
@UbX\_fY]gY'8]``]b[Yb'U"X"'8cbUi ž'5i [gVi f['i bX'l bhYfU``[Ài ž'X]Y
YVYbZU``g'j cb'ghUf\_Ya 'FY[Yb'i bX'<U[Y``VYhfcZZYb'g]bX"'Jcf'XYa

< ]bhYf[ fi bX 'VYfY]hg'j cf\Yf[ Y[ Ub[ YbYf'gW\k YfYf
K YhhYfYfY][ b]ggY'g]bX'X]Y'K Ufbi b[ Yb']a ': fY]ghUUh'b]W\h'ni
i bhYfgW\\AhnYb"</pre>

6YgcbXYfg'VYhfcZZYb']gh'X]Y'FY[]cb'9]W\gh\hhz\kc'Yg'ni 'Yl hfYa Yb\\VYfgW\kYa a i b[Yb'\_Ua "'9]b': Yi Yfk Y\fZU\fnYi ['a i gghY Ui Z[fi bX'XYf'K UggYfa UggYb'gc[Uf'j cfØVYf[Y\YbX'Yj U\_i ]Yfh k YfXYb"'8]Y'9bhk]W\_`i b[Yb']b'9]W\gh\hng]bX'Y]b'\_cb\_fYhYg 6Y]gd]Y`'ZØf'X]Y'; YZU\fYbz'X]Y'gc`W\d`Ohn`]W\Y'i bX'\YZh][Y K YhhYfYfY][b]ggY'a ]h'g]W\Vf]b[Yb'\_ObbYb"'8Yf'Ni ghUbX'XYf GhfU\(\text{Yb}'\) Yb'j YfgW\`YW\hYfhY'g]W\XTfUa Uh]gW\z'gcXUgg'X]Y 9]bgUhn\_f\(\text{A}\zh\Y']b'5`Ufa VYfY]hgW\\UZh'k UfYb"

8]Y'8mbUa ]\_'XYf'K YhhYfYfY][ b]ggY']gh'VYgcf[ b]gYffY[ YbX"'5V Yhk U'%, "\$\$'I \f'VYZUbXYb'g]W\'X]Y'K YhhYfk Ufbi b[ Yb']b ]bg[ YgUa h'g]YVYb'@UbX\_fY]gYbž'i bX'X]Y'G]hi Uh]cb'k ]fX'k Y]hYf\]b j ca '8 K 8'[ YbUi 'VYcVUW\hYh"'9]bY'j cfUi ggW\Ui YbXY'D'Ubi b[ i bX'Ui gfY]W\YbXY'J cfg]W\hga U\\a Yb'g]bX'bchk YbX][ ž'i a a Ò[ `]W\Yb'GW\\AXYb'j cfni VYi [ Yb"

- A ØbWXYb'i bX'l a [YVi b[.'Fch'[YZÀfVhY'K Ufb`U[Y'Ui Z'XYf 8K 8!?UfhY
- CVYfVUmYfb i bX GWk UVYb ]a NYbhfi a XYf K Ufbi b[Yb

 $\label{eq:converse_norm} $$NU^{Y}_WY'=UbX_fY]gY']b'6UmYfb^zXUfibhYf'UiWX'XYf'?fY]g$$FcgYbY]a'ibX'A]YgVUWX^zg]bX'YVYbZU``g'ibhYf'XYf'6YXfc\ib[gWXkYfYf';Yk]hhYf'''@Uih'8K8'_Ubb'Yg'gdcfUX]gWX'ni'<U[Y``a]hY]bYf'?cfb[fÒ>Y'jcb'V]g'ni''' Wa'_caaYb'''8]Y'KYhhYf`U[Y'V`Y]VhUb[YgdUbbhz'kUg'Y]bY'Yf\Ò\hY'KUWXgUa_Y]h'YfZcfXYfh'''$ 

8]Y'a YhYcfc`c[]gWXYb'9IdYfhYb'n]Y\Yb'6]`Ubn'ØVYf'X]Y
9bhk]W\_`i b[Yb'XYf``YhnhYb'K cWXYb'i bX'A cbUhY"'8]Y': À\][\_Y]h
XYf'FY[]cbYbž'a]h'gc`WX'YIhfYaYb'K YhhYfYfY][b]ggYb
i a ni [Y\Ybž'k]fX'Ui Z'X]Y'DfcVY'[YghY``h''I a gc'k]WXh][Yf']gh'Ygž
XUgg'X]Y'6Yk c\bYf'[i h']bZcfa]Yfh'g]bX'i bX'X]Y'K Ufbi b[Yb'Yfbgh
bY\aYbži a 'g]WX'i bX']\fY': Ua]`]Yb'ni 'gWXØhnYb"

±0 'X]YgYf'NY]h'XYg'i bVYfYWXYbVUfYb'K YhhYfg']gh'Yg'YbhgWXY]XYbXž XUgg'X]Y'VUmYf]gWXYb'6Øf[Yf'fY[Y`a À»]['X]Y'BUWXf]WXhYb j YfZc`[Yb'i bX'Ui Z'X]Y'cZZ]n]Y``Yb'K Ufbi b[Yb'XYg'8K 8'\ÒfYb"'8]Y 5i gk]f\_i b[Yb'Xi fWX'I bk YhhYf'\_ÒbbYb'i bj cf\YfgY\VUf'i bX XfUa Uh]gWX'gY]bž'i bX'X]Y'f]WXh][Y'JcfVYfY]hi b[']gh'XYf'GWX`ØggY`ž i a 'X]YgY'BUhi fYfY][b]ggY'g]WXYf'ni 'ØVYfghY\Yb"

8 YhU]`g

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