

5i [gVi f[.'H\Y'\Udd]Ygh'W]hm'cZ'6Uj Uf]U'! A i b]W\'g`]dg°

 $? UggY```YUXg`h\Y`gUh]gZUWh]cb`fUb_]b[`cZ'; Yfa Ub`W]h]Yg`]b &$\&) ~~z`Zc``ck YX`Vm'? fYZY`X`UbX`8 ØggY`XcfZ''`@YUfb`a cfY``$



 $? \ UggY` \check{z} \ 8 \ Yi \ hgWX` Ub X` I' H\ Y` hcd] Wc Z``] ZY` gUh] gZUWh] cb`] g` U[U] b` Uh h\ Y` hcd` cZ`h\ Y` U[Yb X U] b` 6 Uj Uf] U"` 5 WWc fX] b[` hc `h\ Y` W` ffY bh ;` <math>\lozenge W_{g}Uh` Ug \ cZ'h \ Y` Gci h \ ; \ Yfa \ Ub` WUgg`` chhY fm` fG? @Ł \check{z}' h \ Y` 5i [gVi f[` UfY` h\ Y` \ Udd] Ygh` W] h] nY bg` cZ' h\ Y`: fYY` GhUhY` Ub X` gY W` fY Zci fh\ 'd` UWY` Ua cb[` h\ Y` ($`` Uf[Ygh` W] h] Yg`] b`; Yfa Ub m`] b` h\]g` mY Uf" K\]`Y` 5i [gVi f[` WUb` ghUfh` k] h\ `U``i \ W_m`] b XYI` cZ' + "' ' ' dc] bhg` A i b] W\ `ZU``g` cb` h\ Y` & + h\ `d` UWY` k] h\ `cb` m` * ", (` dc] bhg` Ub X` \ Ug fYXi\ WYX` h\ fYY` d` UWY g` Wca\ dUfYX` hc` h\ Y` dfYj\]ci\ g` mY Uf"` H\ Y\ Wca\ dYh] h] cb` Zcf` k\ Y```!\ Y\] b[` YI\ dcgYg`] hgY` Z` dUfh] W`` Uf` m`YI\ hfYa\ Y` m\]g` mY Uf`` Y\ WUi\ gY` Bi\ fYa\ VYf[` \ Ug` U`gc`` cgh` ei\ U`] hm` cZ``] ZY` Ub X\ g`] dg` Zfca\ '\ h\ 'd` UWY''`$

`H\Y`W\Ua dU[bY`!WfUnm`VU_Yf`Zfca '5i [gVi f['WUb`fYU``m`Xc`U

[ccX'Vig]bYgg'\YfYžVYWUigY'h\Y'W]hm'bch'cb`m'gWcfYg'k]h\'h\Y `iW_m'Z][ifYgž'Vih'U`gc'k]h\']hg'`ck'Wf]aY'fUhY'UbX'U'`ck'gW\cc``YUj]b['fUhY"'H\YfY'UfY'ZYkYf'Vif[`Uf]Yg']b'AU]bn'cb`m']b'AU]bn''H\YgY'dcg]h]jY'UgdYWhg'WUb'dUm'cZZ']b'YjYfmXUm'`]ZY"'5i[gVif[YfUfY'acfY'gUh]gZ]YX'k]h\'\Yf'`]ZY'h\Ub'h\Y'cV'YWh]jY'ghUh]gh]Wgkci`X'gi[[Yghž'k\]W\'g\ckg'h\Uh'U'biaVYf'cZ'h\]b[g'UfY'[c]b[kY``]b'a]XZ]Y`X"

``]ZY gUh]gZUWh]cb]b Wca dUf]gcb i

 $\label{thm:converse} $$ H\Y'X]ghUb\WY'hc'h\Y'ch\Yf'`Uf[Yf'W]h]Yg']g'U'WYUf'g][b'''?UggY`']g$$ Uh'h\Y'hcd'cZ'h\]g'fUb_]b['k]h\'U'`i\W_m']bXYI'cZ'+"(('dc]bhgžZ'c``ck\YX'Vm'?fYZY`X'f\+"'-\!UbX'8\ØggY`XcfZ'f\+"'-\!Uh\Y'gi\fj\Ymž\k\]W\'k\Ug'WUff]YX'ci\h'VYhk\YYb'\!Jbi\Ufm'&\$&\UbX'5df]`'\&\$\) ž\U`gc'g\ck\g'h\Uh'ga\U``Yf'W]h]Yg'cZhYb'\Uj\Y'\][\Yf'`]ZY'gUh]gZUWh]cb\Wca\dUfYX'hc'h\Y]f'`Uf[Yf'Wci\bhYfdUfhg'''H\]g']g'U`gc'WcbZ]fa\YX'Vm\\Y'XUhU'Wc``YWhYX.'Ua\cb['h\Y'hcd'hYb'h\YfY'UfY'cb`m'hk\c'cZ'h\Y\hYb'`Uf[Ygh';\Yfa\Ub'W]h]Ygž'bUa\Y`m'8\ØggY`XcfZ'UbX'<Ua\Vi\f['''$

'dcg]h]j Y XYj Y`cda Ybhg'

*** 18 Ygd]hY h\ Y 'g`cd]b['d`UWYgž'h\ Y 'gi fj Ym'g\ck g'U'dcg]h]j Y hfYbX.

***]ZY 'gUh]gZUWh]cb ']b 'a U'cf'; Yfa Ub 'W]h]Yg'\ Ug']bWfYUgYX 'Vm'\$"%'

dc]bhg" 'H\]g 'Wci `X 'U`gc 'VY 'Xi Y 'hc 'h\ Y 'YZZY Whg 'c Z'WcfcbU'dUbXYa]Wž

h\ Y 'XUhU'c Z'k \]W\ 'bck 'Z'ck ']bhc 'h\ Y 'fUb_]b["'<ck Yj Yfž']h'fYa U]bg

hc 'VY 'gYYb '\ ck 'A i b]W\ 'UbX'Bi fYa VYf['k]```fYgdcbX'hc 'h\ YgY

W\ U``Yb[Yg']b 'h\ Y 'Wca]b['mYUfg"'H\ Y 'ZUWh']g. 'Gi W\ 'U'ga U``'!gWU`Y

j]Yk 'c Z'ei U`]hm'c Z'`]ZY 'UbX'gi V 'Y Wh]j Y '`]ZY 'gUh]gZUWh]cbž'Ug'6YfbX

F UZZY`\ ØgW\ Yb 'Zfca 'h\ Y 'I b]j Yfg]hm'c Z': fY]Vi f['UXXfYggYgž'g\ ci `X

VY'c Z'[fYUh']a dcfhUbW' 'Zcfii fVUb'XYj Y`cda Ybh']b 'h\ Y 'Z hi fY'"

'Cj YfU``ž']h'fYa U]bg'hc'VY'gU]X'h\Uh'h\Y'&\$&) 'i fVUb'fUb_]b['_YYdg Vch\'dcg]h]j Y'UbX'bY[Uh]j Y'gi fdf]gYg'fYUXm'UbX'g\ck g'cbW' a cfY']a dfYgg]j Y`m'k \YfY'h\Y'ZYY`]b['cZ'\Udd]bYgg']b'; Yfa Ubm']g Uh'\ca Y"'K \]'Y'5i [gVi f[']g'VYUa]b[ž'WUhW\]b['i d']g'gh]``'h\Y cfXYf'cZ'h\Y'WUhW\'Zcf'A i b]W\"'

 $\label{eq:continuous} \begin{array}{ll} \text{ if } fh \setminus Yf^{-}]bg][\setminus hg^{-}UbX^{-}XYhU]^{-}g^{-}cb^{-}h \setminus Y^{-}fYgi^{-}hg^{-}WUb^{-}VY^{-}Zci^{-}bX^{-}]b^{-}h \setminus Y\\ \text{fYdcfhg}^{-}cZ^{-}\underline{A} \ Yf_{-}i^{-}\underline{f}^{-}\underline{z}^{-}\underline{5}i^{-}[gVi^{-}f[Yf^{-}\underline{5}^{-}\underline{c}]Yg^{-}VUg^{-}k^{-}Y^{-}\underline{U}g^{-}k^{-}Y^{-}\underline{U}g^{-}k^{-}Y^{-}\underline{U}g^{-}k^{-}\underline{Y}^{-}\underline{U}g^{-}k^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{k}^{-}\underline{Y}^{-}\underline{U}g^{-}\underline{u}g^{$

8 Y hU]`g	
Cfh	?UggY`ž'8Yi hgWX`UbX
Ei Y``Yb	• k k k "a Yf_i f"XY
	• k k k "Ui [gVi f[Yf!U``[Ya Y]bY"XY
	• k k k "g_`![`i YW_gUh`Ug"XY

6Ygi WXYb G]Y i bg Ui Z. bU[!\YggYb "XY