

K U\`W\Ucg`]b`A YI]_c.`Bi f`%' `ı `gh]a a Yb ØVYf`F]W\ hYf`UV°

A YI]_cg'i a ghf]hhYbY'F]W\hYfk U\``Ua '&"'≯b]'&\$&) j YfnY]W\bYhY'bi f'%'ı 'K U\`VYhY]`][i b['i bX'k]fZh': fU[Yb'ni f 8 Ya c fUh]Y'Ui Z'



A YI]_c ž A YI]_c ! 5a `GcbbhU[ž XYa `&" * b] `&\$ &) ž ZUbXYb `]b

A YI]_c K U\ `Yb `ni f `5i gk U\ ``j cb `F]W\ hYfb `ghUhhž X]Y j cb

DfÀg]XYbh]b `7 `Ui X]U `G\ Y]b VUi a `U`g` 9fZc`[`[YZY]Yfh `k i fXYb" `8]Y

K U\ ``ZØ\ fhY `YXc W\ `ni `Y]bYf U`Ufa]YfYbX `b]YXf][Yb `6YhY]`][i b[
j cb `bi f `%' `DfcnYbh `XYf `k U\ `VYfYW\ h][hYb `6Øf[Yfž `k Ug : fU[Yb `ni f

@Y[]h]a]hÀh `XYg `J YfZU\ fYbg `Ui Zk]fZh" `6Y] `X]YgYf `5Vgh]a a i b[
gc ``hYb `Yhk U `, , \$ `6i bXYgf]W\ hYfdcg]h]cbYbž `XUfi bhYf `Ui W\ `Y]b][Y

Dcg]h]cbYb `]a `C VYfghYb `; Yf]W\ hg\ c Zž `gck]Y `< i bXYfhY `j cb ``c_U`Yb

F]W\ hYfb `i bX `A U[]ghfUhYb `bYi `VYgYhnh `k YfXYb " `6Yf]W\ hY j cb `5`

*JnYYfU `gW\]`XYfb `X]Y `K U\ ``c_U`Y `U`g` [fO`> hYbhY]`g ``YYf "

9]b 'nYbhfU`Yg'DfcV`Ya ž'k Y`W\Yg'j]Y`Y'K À\`Yf'XUfUb'\]bXYfhYž]bZcfa]YfhY'9bhgW\Y]Xi b[Yb'ni 'hfYZZYbž']gh'X]Y'ZY\`YbXY HfUbgdUfYbn'ØVYf'X]Y'DUfhY]ni [Y\Òf][_Y]hYb'XYf'?UbX]XUhYb"
8 UfØVYf'\]bUi g'Xi fZhYb'X]Y'?UbX]XUhYb'_Y]bYb'i a ZUggYbXYb
K U\`_Ua dZ'ZØ\fYb"'8]Yg'ZØ\fhY'ni 'Y]bYf'k Y]h'j YfVfY]hYhYb
I b_Ybbhb]g'i bhYf'XYb'K À\`Yfbž'X]Y'g]W\'bUW\'a Y\f

\$\d{z}Cfa Uh]cbYb'ØVYf'X]Y'?UbX]XUhYb'gY\bhYb"

I a ghf]hhYbY '≯ gh]nfYZcfa

8]Y 'U_hi Y``Y 'K U\``]gh'HY]``Y]bYf'i a ghf]hhYbYb '\(\frac{1}{2}\)gh]nfYZcfa \(\frac{7}{2}\)X\] j ca 'Y\Ya U`][Yb 'Df\(\frac{2}{2}\)]X\Yb hYb '\(\frac{5}{2}\)B\]h]]Yfh'k i fXY'i bX'_i fn'j cf'gY]bYa '\(\frac{5}{2}\)a hg\(\frac{9}{2}\)Y\Yfi k i fXY'' 8]YgY '\(\frac{7}{2}\)Cfa \(\frac{7}{2}\)X\]Y\[\frac{7}{2}\]hy '\[\frac{7}{2}\]hy '

8 Yf'Ni [Ub['ni f'a YI]_Ub]gW\Yb'\rightarrow gh]n'V\Y]Vh'Xi fW\'\c\Y
?cffi dh]cb'i bX'\rightarrow YZZY_h]j]h\h'ghUf_'Y]b[YgW\f\hb_h''\9]bY'I a ZfU[Y
nY][hY\color XUgg'++'DfcnYbh'XYf'A YI]_UbYf'[`Ui VYb\color JYfVfYW\Yb
k \@fXYb'bi f'VY]'dc`]h]gW\Ya 'cXYf'a YX]U'Ya '8 fi \w_'[YU\bXYh''\8 Yf
FYZcfa dfcnYgg'k]fX'ni XYa 'Xi fW\'X]Y'HUhgUW\Y'YfgW\k Yfh\color XUgg
a]bXYghYbg'\% DfcnYbh'XYf'GhfUZhUhYb'Ub[YnY][h'k YfXYb\color i bX'bi f
Y]b'6fi W\hY]`'XUj cb'ni 'JYfi fhY]`i b[Yb'Z\old \fh''

6YXYb_Yb^ØVYf^9]bZi ggbU\a Y

8]Y'K U\'Yb'_ObbhYb'a O[`]W\Yfk Y]gY'j cb'_f]a]bY'`Yb'; fi ddYb VYY]bZi ggh'k YfXYb"'9]b][Y'?UbX]XUhYb'ghY\Yb']a 'JYfXUW\hž JYfV]bXi b[Yb'ni '8fc[YbVcggYb'cXYf'UbXYfYb'_f]a]bY``Yb Cf[Ub]gUh]cbYb'ni '\UVYbž'k Ug'X]Y'Ÿb[ghY'j cb A YbgW\YbfYW\hg[fi ddYb'i bX'5bU`mghYb'j YfghÀf_h"'8Yf'I G! 6chgW\UZhYf']b'A YI]_cž'?Yb'GU`UnUfž'Ài »YfhY'YVYbZU``g'gW\UfZY?f]h]_'Ub'XYf'FYZcfa ž']bXYa 'Yf'X]YgY'U`g'6YXfc\i b['ZØf'X]Y 8Ya c_fUh]Y'XYg'@UbXYg'VYnY]W\bYhY"

9gʻ]ghʻ[Yd`UbhžʻXUggʻY]bYʻnk Y]hYʻFi bXYʻXYfʻF]WXhYfk U\`Ybʻ]a ˈ¾\f &\$&+ʻghUhhZ]bXYbʻk]fXžʻi a ʻY]bYʻk Y]hYfYʻ5i gk U\``ni ʻhfYZZYb"ʻ‡b X]YgYfʻYfghYbʻK U\``k UfʻX]YʻFY]\YbZc`[YʻXYfʻni ʻk À\`YbXYbʻDcghYb Xi fWXʻY]bYʻNi ZU``gʻchhYf]YʻVYgh]a a hʻk cfXYb"ʻ8YfʻDfchYghʻ[Y[Yb X]YʻFYZcfa ʻi bXʻX]YʻK U\``nY][hžʻXUggʻY]bʻ[fc» YfʻHY]``XYf 6Yj Ò`_Yfi b[ʻi a 'X]YʻI bUV\Àb[][_Y]hʻi bXʻ‡bhY[f]hÀhʻXYg ¾ gh]ngmghYa gʻVYgcf[hʻ]gh"

± 'XYb'_ca a YbXYb'HU[Yb'k YfXYb'X]Y'YbX[Ø`h][Yb'K U\`fYgi `hUhY Yfk UfhYhž'YXcW\'XYi hYh'VYfY]hg'Yhnh'U``Yg'Ui Z'Y]b'Y\Yf'bY[Uh]j Yg 6]`X'ZØf'X]Y'bYi Y'F]W\hYfk U\``\]b"

: $\emptyset f'k Y]hYfY' + Zcfa Uh]cbYb'ni 'X]YgYa 'H\Ya U'`YgYb'G]Y'X]Y 6Yf]WkhY'j cb'5`` <math>UnYYfU$ ž'N8: 'i bX'G $\emptyset XXYi$ hgWkY'NY]hi b["

8YhU]`g	
J c f ZU``	K U\`Yb
I fgUWXY	_cffi dhYgʻ\langle gh]ngmghYa zʻdc`]h]gW\Y
	9]bZi ggbU\a YžK U\`Yb
Cfh	A YI]_c ž A YI]_c
EiY``Yb	k k k "U`^UnYYfU"Wcak k k "nXZ"XY
	• k k k "gi YXXYi hgVXY"XY

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