

GUbcZ] 'gW\`À[h'-ž%'A]``]UfXYb'8c``Uf'ZØf 6`i Ydf]bh'AYX]W]bYg'ni °

GUbcZ]'ØVYfb]a a h'6`i Ydf]bh'A YX]W]bYg'ZØf'- ž%'A]``]UfXYb 8 c``Ufž'i a 'X]Y' → a a i bc`c[]Y!GdUfhY'ni 'ghÀf_Yb'i bX'gY`hYbY ?fUb \Y]hYb'ni 'VY\UbXY`b"



I G5 '! 'GUbc Z]' [UV '\Yi hY 'Y]bYb 'VYXYi hYbXYb 'GW\f]hh']b 'XYf

D\Ufa U]bXi ghf]Y 'VY_Ubbh '8]Y 'ZfUbnÒg]gW\Y':]fa U'd 'Ubh'X]Y

, VYfbU\a Y 'XYg'I G!D\Ufa Ui bhYfbY\a Ybg'6`i Ydf]bh'A YX]W]bYg

ZØf']bg[YgUa h'- ½%'A]``]UfXYb'I G!8c``Ufž'k Ug'Yhk U', 'A]``]UfXYb

9i fc 'Ybhgdf]W\h''8Yf', VYfbU\a YdfY]g'j cb '%- 'I G!8c``Uf'dfc

5_h]Y 'VY]b\U`hYh'Y]bYb'5i ZgW\`U['j cb '&+ 'DfcnYbh'Ui Z'XYb

GW\`i gg_i fg'j cb'6`i Ydf]bh'Ua ': fY]hU["'8]YgYg'; YgW\ÀZh'n]Y`h

XUfUi Z'UVž'GUbcZ]g'Dcg]h]cb']a 'k UW\gYbXYb'6YfY]W\`gY`hYbYf

]a a i bc`c[]gW\Yf'?fUb_\Y]hYb'ni 'gh\Af_Ybž'VYf]W\hYh'

gi YX_i f]Yf"XY"

GUbcZ]!7\YZ'DUi``<i Xgcb'VYnY]W\bYhY'X]Y', VYfbU\a Y'U`g ghfUhY[]gW\Yb'GW\f]hh'ni f'9fk Y]hYfi b['XYg'DcfhZc`]cg'ZØf'gY`hYbY $\label{eq:special-sp$

, VYfV`]W_'ØVYf'6`i Ydf]bh'A YX]W]bYg

6`i Ydf]bh'A YX]W]bYg'\Uh'g]W\'U`g'GdYn]U`]gh'ZØf'gY`hYbY \Rightarrow a i bYf_fUb_i b[Yb'i bX'?fYVg'YhUV`]Yfh"'6YgcbXYfg'VY_Ubbh']gh XUg'I bhYfbY\a Yb'ZØf'5mj U_]hž'XUg'Y]bn][Y'ni [Y`UggYbY A YX]_Ua Ybh'ni f'6Y\UbX`i b['XYf'gmghYa]gW\Yb'A UghcnmhcgY fGA Ł"'8]YgYg'DfcXi _h'\Uh'g]W\'U`g'`i _fUh]j Y'B]gW\Y'a]h'ghY][YbXYb I a gÀhnYb'i bX'Y]bYf'k UW\gYbXYb'DUh]YbhYbVUg]g'Ybhk]W_Y`h" BYVYb'5mj U_]h'Vf]b[h'6`i Ydf]bh'Ui W\'k Y]hYfY'j]Y`j YfgdfYW\YbXY K]f_ghcZZ_UbX]XUhYb'k]Y'9`YbYgh]b]V'i bX'6@!, \$, 'a]hž'X]Y']a DcfhZc`]c'j cb'GUbcZ]'X]Y' \Rightarrow a i bc`c[]Y!GdUfhY'ghÀf_Yb'_ObbhYbž k]Y'Z]bUbnhfYbXg"XY'Yf_`Àfh"

8]Y', VYfbU\a Y'_ObbhY'6`i Ydf]bh'Ui W\'Yfa O[`]W\Ybž'X]Y
VYghY\YbXYb'BYhnk Yf_Y'ni 'bi hnYb/XUg'I bhYfbY\a Yb']gh'VY]
5``Yf[c`c[Ybž'8Yfa Uhc`c[Yb'i bX'=a a i bc`c[Yb'[i h'j YfbYhnh"
8]YgY'JYfV]bXi b[Yb'k YfXYb'ZØf'GUbcZ]'j cb'6YXYi hi b['gY]bž'i a
X]Y': cfgW\i b['i bX'XYb'JYfhf]YV']a '6YfY]W\'XYf'=a a i bc`c[]Y'ni
ZOfXYfb"'8Yf'5VgW\`i gg'XYf', VYfbU\a Y']gh'ZØf'XUg'Xf]hhY'E i UfhU`
&\$&' '[Yd`Ubh'i bX'k]fX'j cfUi gg]W\h`]W\'_Y]bY'g][b]Z]_UbhYb
5i gk]f_i b[Yb'Ui Z'X]Y':]bUbndfc[bcgY'j cb'GUbcZ]'ZØf'&\$&)
\UVYb"

< YfUi gZcfXYfi b[Yb i bX 7\UbW\b]a 6YfY]W\ gY`hYbYf'?fUb_\Y]hYb</pre>

 $8 \ Yf'A \ Uf_h'Z \ 0f'5fnbY]a \]hhY``[Y[Yb'gY`hYbY'Ui hc]a \ a \ i \ bY \ 9f_fUb_i \ b[Yb']gh'Xi \ fWX'Yb[Y'5VgUhna Åf_hY'i \ bX'\c\Y$

9bhk]W_i b[g_cghYb^[YdfÀ[h"@Ui h'XYf'j ZU"XY^g]bX^9f_fUb_i b[Yb k]Y^A mUghYb]U^[fUj]g'i bX^gmghYa]gWXY^G_`YfcgY^]b^XYf^9I bi f^VY]Yhk U^nk Y]'j cb^%\$"\$\$\$^6Øf[Yfb^Ubni hfYZZYb"^Hfchn^XYf A Uf_hYI_`i g]j]hÀhž^X]Y^Xi fWX^XYb^Cfd\Ub!8fi [!GhUhi g^ØVYf^Y]bYbNY]hfUi a 'j cb^nY\b^\J\fYb^[Yk À\fh^k]fXŽ^V`Y]Vh^X]Y^9bhk]W_i b[gc`WXYf^AYX]_Ua YbhY^f]g_Ubh'i bX^_cghgd]Y`]["

GUbc Z] 'd `Ubhž'Xi fW\ 'X]Y '5_ei]g]h]cb'j cb'6`i Ydf]bh'[Yn]Y`h']b K UW\ghi a gZY`XYf'k]Y 'X]Y = a i bc`c[]Y 'ni ']bj Ygh]YfYbž'k Ug a]hhY`!'i bX'`Ub[Zf]gh]['dcg]h]j Y '5i gk]f_i b[Yb'Ui Z'; Yk]bba Uf[Yb i bX'XYb'; Yk]bb'dfc'5_h]Y'Yfk UfhYb'`Àggh'':]bUbn]Yfi b['XYf HfUbgU_h]cb'YfZc`[h'Xi fW\'j cf\UbXYbY'A]hhY``gck]Y'bYi Y GW\i`XYb''

Ni gUa a YbZUggYbX``Àggh`g]W\`gU[Ybž`XUgg`GUbcZ]`a]h`X]YgYf , VYfbU\a Y`Y]bYb`k Y]hYfYb`ghfUhY[]gW\Yb`GW\f]hh`]b`Y]bYa k]W\h][Yb`K UW\ghi a gVYfY]W\`i bhYfb]a a hž`XYf`gck c\` <YfUi gZcfXYfi b[Yb`U`g`Ui W\`7\UbW\b`]b`XYf`d\Ufa UnYi h]gW\Yb 9bhk]W_`i b[`a]h`g]W\`Vf]b[h"

8 Y hU]`g	
J c f ZU``	∣ bhYfbY\a YbgZi g]cb
Cfh	I G5
GWX UXYb ']b '	, \$\$\$\$\$\$\$\$
EiY``Yb	• k k k "gi YX_i f]Yf"XY
	k k k "Z]bUbnhfYbXg"XY
	• k k k "j ZU"XY

6 Y gi W Y b 'G] Y 'i b g 'U i Z 'b ! U ["b Y h