

J]Y`ZU`h`ZY]Yfb`]b`6Ui hnYb`i bX 6fUi bgWkkY][..7G8 i bhYf G]WkYf\Y]hgVYXYb_Yb

7G8!DUfUXYb']b'6Ui hnYb'i bX'6fUi bgWkkY]['i bhYf Dc`]nY]gWki hn.'Ni bY\a YbXY'<Ugg_f]a]bU`]hÀh'[Y[Yb'ei YYfY A YbgWkYb'YfZcfXYfh'Yf\O\hY'G]WkYf\Y]hga U»bU\a Yb"

±0 'X]YgYa 'Gca a Yf'ghY\Yb'X]Y'7\f]ghcd\Yf'GhfYYh'8Um
f7 G8 Ł! DUfUXYb']b'8 Yi hgW\`UbXž'X]Y'ZØf'J]Y`ZU`h'i bX'Hc`YfUbn
ghY\Ybž'Ui Z[fi bX'XYg'5bgh]Y[g'j cb' < Ugg'i bX' < YhnY'[Y[Yb
ei YYfY'A YbgW\Yb']a 'A]hhY`di b_h"' ≠0gVYgcbXYfY'X]Y'7G8!I a nØ[Y
]b'6Ui hnYb'i bX'6fUi bgW\kY]['Z]bXYb'Ub'X]YgYa 'K cW\YbYbXY
i bhYf'ghfYb[Yb'G]W\Yf\Y]hgj cf_Y\fi b[Yb'ghUhhži a 'X]Y'G]W\Yf\Y]h
XYf'HY]`bY\a Yf'ni '[Yk À\f`Y]ghYb"

$G]WXYfY]hgj cf_YYfi b[Yb']b'6fUi bgWXkY][$

±0.6fUi bgWk Y]['k]fX'Ub'X]YgYa 'K cWkYbYbXY'YVYbZU``g'Y]b'7G8 [YZY]Yfh" 8Yb'9]bgUhn'j cb'df]j UhYb'G]WkYf\Y]hg_fÀZhYb'\Uh'X]Y Dc`]nY]'bUWk'Y]bYa 'Vfi hU`Yb'5b[f]ZZ'Ui Z'Y]bYb'4 b[Yb'A Ubb']a `YhnhYb'₺\f'j YfghÀf_h": Øf'X]Y'DUfUXY'gY`Vgh'k YfXYb'Yhk U') "\$\$\$ HY]`bY\a Yf'Yfk UfhYh" =a 'J cfZY`X'\Uh'X]Y'Dc`]nY]'Ui Wk'j cf'Y]bYf K Y``Y'j cb'<Ugg_ca a YbhUfYb'[Yk Ufbhž'X]Y']a 'Ni gUa a Yb\Ub[a]h'XYa '7G8'Ui Z'gcn]U`Yb'A YX]Yb'Ui Z[YhfYhYb'q]bX"

Ni bU\a Y j cb < Ugg i bX < YhnY

8]Y'JYfUbghU`hYf'XYg'7G8']b'6Ui hnYbž'k c'fi bX') \$\$'HY]`bY\a Yf Yfk UfhYh'k YfXYbž'a i gghYb'Y]bY'[Yd`UbhY'5VgW\`i ggdUfhm'Ui g G]W\Yf\Y]hg[fØbXYb'UVgU[Yb"'*&bUg'@ÒgW\Ui ž'Y]bYf'XYf A]hcf[Ub]qUhcfYbž'[UV'Ubž'XUqq'q]Y'X]Y'9bhqW\Y]Xi b['[YhfcZZYb $\label{eq:continuity} $$ \lambda hhYbž'k Y]^XY'5bnU^XY'f'Ub[Y_\emptysetbX][hYb'DfchYghY'[Y[Yb'XYb'7G8'j]Y^'[fO) Yf'k Uf'U`g'Yfk UfhYh''8]YgY'DfchYghY'nY][Ybž'XUgg XYf'[YgY``gWXUZh`]WXY'8]g_i fg'ØVYf'@, 6HE Ž!FYWXhY'k Y]hYf\]b'j cb GdUbbi b[Yb'[YdfÀ[h']gh''$

Dc`]nY]Y]bgUhn]b 6Ui hnYb

5a 'GUa ghU['k]fX'XYf'7G8!Ni [']b'6Ui hnYb'a]h'Y]bYa '[fc» Yb
Dc`]nY]Ui Z[YVch'VY[]bbYbži a 'a Ò[`]WXY'fYWX hgYl hfYa]gh]gWXY
I bfi \Yb'ni 'j Yf\]bXYfb"'BYVYb'XYf'7G8!DUfUXY'g]bX'Ui WX
; Y[YbXYa cbghfUh]cbYb'i bhYf'XYa 'A chhc'; Y[Yb
; YbXYfdfcdU[UbXU'i bX'=XYbh]hÀhgj Yfk]ffi b[*** 'a]h'V]g'ni '(\$\$
HY]`bY\a YbXYb'[Yd`Ubh"'8]Y'Dc`]nY]'\Uh'VYhcbhž'XUgg'XUg'N]Y`'XYf
A U» bU\a Yb'XUf]b'VYghY\hž'Y]bYb'fY]Vi b[g`cgYb'5V`Ui Z'XYf
J YfUbghU'hi b[Yb'ni '[Yk À\f`Y]ghYb"

2 ZZY b h`]W\ Y `F Y U_h]c b Y b `Ui Z`X]Y G]W\ Y f\ Y]hg`U[Y

GUW gYbg → gh]na]b]ghYf]b ? Uh'U A Y]Yf \ Uh'g]W \ VYgcf[h'ØVYf X]Y ni bY\a YbXY; Yk U`h'[Y[Yb ei YYfY A YbgW Yb [YÀi » Yfh'i bX X]Y 5VgU[Y'j cb J YfUbghU`hi b[Yb 'U`g 5i gXfi W_a YbgW YbZY]bX`]W Yf → XYc`c[]Yb 'VYnY]W bYh" 8]YgY 'Ÿi » Yfi b[Yb 'gd]Y[Y`b 'X]Y k UW gYbXY 6Ygcf[b]g]b 'XYf'; YgY``gW UZh'k]XYfž'k c < Ugg i bX; Yk U`h'[Y[Yb @ 6HE Ž !A YbgW Yb]a a Yf'\Ài Z][Yf'h\Ya Uh]g]Yfh k YfXYb"

< Ugg_f]a]bU`]hÀh`]b gcn]U`Yb A YX]Yb

8]Y'Dc`]nY];]Z\cfb'i bhYfgi W\h'nU\`fY]W\Y'<Ugg_ca a YbhUfY'ni
Y]bYa 'Cb`]bY!5fh]_Y``ØVYf'XYb'7G8ž'X]Y']b'gcn]U`Yb'A YX]Yb
j YfÒZZYbh`]W\h'k i fXYb"'8]Y'?ca a YbhUfY'i a ZUgghYb
6Y`Y]X][i b[Yb'i bX'8fc\i b[Ybž'X]Y'XYb'GhUUhggW\i hn'Ui Z'XYb
D`Ub'f]YZYb"'8]Yg'i bhYfghfY]W\h'X]Y'<YfUi gZcfXYfi b[Ybž'X]Y']b'XYf
\Yi h][Yb'X][]hU`Yb'?ca a i b]_Uh]cb'VYghY\Yb'i bX'k]Y'h]YZ
j Yfk i fnY`h'\ca cd\cVY'5bq]W\hYb']b'HY]`Yb'XYf'6Yj Ò`_Yfi b['g]bX"

8Yf'7G8'U'g'Gd]Y[Y'XYf'; YgY'gWUZh

8 Yf'7 G8 ']gh'a Y\f'U`g'bi f'Y]bY': Y]Yf/'Yf'Yf]bbYfh'Ub'X]Y'GhØfa i b[
XYf' GhcbYk U``'±bb ']b'%-*-'i bX'ghY\h'ZØf'XYb'? Ua dZ'i a 'FYW\hY
i bX'; 'Y]W\\Y]h'ZØf'@, 6HE Ž!DYfgcbYb"'Hfchn'XYf'ghY][YbXYb
G]W\Yf\Y]hgVYXYb_Yb'nY][Yb'X]Y'DUfUXYb']b'; fc>ghÀXhYb'k]Y
6Yf`]b'i bX'? Ò`bž'XUgg'j]Y`Y'A YbgW\Yb'VYfY]h'g]bXž'ZØf']\fY'FYW\hY
i bX']\fY'=XYbh]hÀh'Y]bni hfYhYb"'9g']gh'i bYf`Àgg`]W\ž'XUgg'X]Y
; YgY``gW\UZh'ni gUa a Yb_ca a hž'i a 'J]Y`ZU`h'ni 'ZÒfXYfb'i bX'[Y[Yb
±bhc`YfUbn'Y]bni hfYhYb"

8 Y hU] `c

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. 'X]Y!bUWX f]WX hYb "b Yh