

5W_bck `YX[Ya YbhcZ7ci bhfm

I BGK '5fhgž'8Yg][b'UbX'5fW]hYWhifY'?Ybg]b[hcb'UbX'DUXX]b[hcb'WUadigYg'UfY'Vi]hhcb'5Vcf][]bU`

7ci fgY 8YHJ] g

$I b hg c Z 7 f Y X h^*$

Gi a a UfmcZh\Y 7ci fgY

 $H \ Y'; \ fYY_``Ub[i\ U[YZ`\ck\ Yj\ Yf']bff]WUhYz']g'a\ cfY'h\ Ub'mYh'Ubch\ Yf'ZcfY][b``Ub[i\ U[Y/]h]g'h\ Y'_Ymhc i b`cW_]b['U'[fYUhW'h fY'h\ Uh]g'h\ Y'VUW_VcbY'cZci f'a cXYfb'W]j']nUh]cb''' <math>\Rightarrow$ 'h\]g'Wci fgY'mci 'UfY]bffcXi WYX'hc'h\ Y'; \ fYY_```Ub[i\ U[Y'UbX'mci 'k\]'``VY[]b'hc'`YUfb'Z bWh]cbU''; \ fYY_z'k\]W. 'WUb'VY'i\ gYX']b Yj\ YfmXUm`]ZY']b''; \ fYY\W''''Mci 'UfY'YI\ dcgYX'hc'h\ Y'; \ fYY_'U`d\UVYhhc'a\ U_Y'fYUX]b['UbX'k\ f]h]b['dcgg]V'Y'Ug\ Zfca''h\ Y'Z[fghk\ YY_'cZWUggYg'''6Ug]W[fUa\ a\ Uh]WU`'UbX'gmbhUW]WU`'UgdY\ Wg'cZ; \ fYY_'UfY']bffcXi\ W'X h\ fci[\cfU`z']ghYb]b['UbX'fYUX]b['UWhjj]h]Yg'''H\ Y'a\ cfd\c`c[mUbX'glfi\ Whi\ fY'cZh\ Y'`Ub[i\ U[Y']g'dfYgYbhYX]b'h\ Y'\ WcbhYI\ fcZW\ 'hi\ fU`mfY'Yj\ Ubhhcd]\ Wg'k\]WcbW'fb'h\ Y'a\ cXYfb'; \ fYY_'k\ cfX'`]_Y'dcdi'\ Uf'W''hi\ fY'z\ a\ i\ g]\ W'W]g]bYz'hfUj\ Y'z'ffUX]h]cbgz'\ WbYa\ U'UbX'W\ ffYbhUZUJfg''

H\]g`Wci fgY`]g`U`VY[]bbYfg!`Yj Y```Ub[i U[Y`Wci fgY"`5```gh XYbhg`k \c`\Uj Y`\UX`gca Y`YI dYf]YbW'`k]h\`h\Y`Ub[i U[Y`ZY]h\Yf`Ug`U`\Yf]hU[Y``Ub[i U[Y`cf`h\fci [\`dfYj]ci g`]bghfi Wf]cbža i ghZ]```]b`h\Y`d`UWa Ybh ei Ygh]cbbU]fY`Uj U]`UV`Y`Uh\\hdg.#k k k"Ufhg"i bgk "YXi "Ui #\U`#ghi Xmli g#fYgci fWg!gi ddcfh#Ub[i U[Y! d`UWa Ybhg"`Mci `k]```bchVY`dYfa]hhYX`hc`Ybfc``]b`U``Ub[i U[Y`Wci fgY`h\Uh]g`hcc`YUgmZcf`mci "`\Zh\]g c\W\ fgžmci `k]```VY`fYei YghYX`hc`W\Ub[Y`mci f`Ybfc`a Ybh'

7cifgY@YUfb]b[CihWcaYg

- %" I gY`U'j YfmVUg]WfUb[Y`cZj cWUVi `Ufm'UbX`d\fUgYg`]b`; fYY_`UbX`Udd`m'U'ZYk `g]a d`Y`fi `Yg`cZ [fUa a Uf"
- "I gy j YfmVUg)WghfUhY []Yg hc a U]bhU]b Wca a i b]WUh]cb"
- (" =XYbh]Zmgca Y ZYUh fYg cZ`]b[i]qh]WUbX W `h fU`X]j Yfq]lmž]bW]‰

5 hmy b X Ub WY F Yei] f Ya Yb hg

 $\hbox{Ghi XYbhg'UfY'ghfcb[`m'YbWc'i fU[YX'hc'UhhYbX'U```WUggYg'UbX'fYj]Yk'``YWhi fY'fYWc'fX]b[g''' } \\$

7ci fgY'GWXYXi `Y

J]Yk 'WUgg'ha YhUV'Y

H]a YtUV`Y

8UhY	HmdY	7cbhYbh
K YY_'%'' \$'A Um!'' >i bY	@YWhifY	±bhfcXi Whcfmi@Yggcb. hh\Y'U'd\UVYhi
	Hi hcf]U`	; fYY_'U`d\UVYhž'UWWbh'gmghYa ž'dfcbi bW]Uh]cb'
K YY_'&.'*'>i bY'!'%\$	@YWhifY	±bhfcXi Wh]cbg'
	Hi hcff][W`	

 $\label{eq:continuity} UWW gg]b[\ ^th Y \cdot dY fgcbU \cdot]gYX \cdot k \ YV \cdot ^t]b_ \cdot j \]U \cdot th Y \cdot A \ ccX \cdot Y \cdot Wci \ fgY \cdot g]tY''$

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Hi fb]h]b Gi Va]gg]cb

Image: Ybwci bhYf'U'dfcV'Ya k \Yb'UhYa dhJb['hc'gi Va]hmci f'Ugg][ba Ybht\fci [\'Hi fb]hJbž'd'YUgY

HY'Yd\cbY'9| hYfbU'`Gi ddcfhcb'-',) '' ' ' %cf'Ya U]`'h\Ya 'cb'Y! hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui '"'Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY_XUmg'UbX'-.\$\$Ua '-').\$\$da 'cb'k YY_YbXg'fl *) 'XUmg'U'mYUfŁ"'=Imci
UfY'i bUV'Y'hc'gi Va]hmci f'Ugg][ba YbhXi Y'hc'U'ZJi 'hk]h\'Hi fb]hJb'mci 'a UmUdd'mZcf'Ub'Y! hYbg]cbž'Vi hmci
a i ghfYhJ]b'mci f'hJW_Yhbi a VYf'Zfca '9! hYfbU'`Gi ddcfhfU'cb['k]h\'Ubmch\Yf'fY'Yj UbhXcW a YbhgŁ'hc
]bWi XY'Ug'Yj]XYbW'hc'gi ddcfhmci f'Y! hYbg]cb'Udd']WUhJcb"'=Imci 'Ya U]''9! hYfbU'`Gi ddcfhmci 'k]'`
Ui hca UhJWJ'`mfYWY]j Y'U'hJW_Yhbi a VYfž'Vi h]Zmci 'hY'Yd\cbY'mci 'k]'``bYYX'hc'gdYWJZJWJ'`mUg_'Zcf'cbY''
Hi fb]hJb'U'gc'dfcj]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hYf"

; YbYfU`mž'UggYgga YbhiHug_g'a i ghVY'gi Va]hhYX'Y`YVWfcb]\WJ``mij]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ba Ybh''=b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk]```VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k]h\U`hYfbUh]j Y'gi Va]gg]cb'XYHJ]`g"

: cf']b \mathbb{Z} cfa Uh]cb'cb'\ck 'hc'gi Va]h'Ugg][ba Ybhg'cb`]bY'j]U'A ccX`Y. `\hhdg.##gh XYbh'i bgk "YXi "Ui \mathbb{A} ck! qi Va]h'Ugq][ba Ybha ccX`Y

5 WUXYa]W<cbYghmUbX D`U[]Uf]ga

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i=iWUbihU_Yia Ubm Zcfa gžZfca iXYi]VYfUhYiWXYUh]b[ihciUWW]XYbhU`mWcdm]b[iZfca iUigci fWYik]h\ci hiUW_bck iYX[Ya Ybh'i

5 WUXYa]W + DZcfa Uhjcb

8 i Y 'hc 'Yj c'j]b['UXj]WY 'VmB GK '< YU'th žighi XYbhg'a i gh'WkYW_'Zcf'i dXUhYX']bZcfa Uh]cb 'fY[UfX]b['cb`]bY 'YUfb]b['Zcf'U``'5fhgž'8 Yg][b 'UbX'5fWk]hYWhi fY 'Wci fgYg'th]g'thYfa 'fJ]U'A ccX`Y'cf'Wci fgY']bZcfa Uh]cb dfcj]XYX"Ł

: cf`YggYbhJU``ghi XYbh`]bZcfa UhJcb`fY`UhJb['hc.