

SOCF5109

: Ua]`mi±bWi g]jY'DfUWjW

HYfa "Hk c" ## "&\$&\$

7ci fgY⁻Cj Yfj]Yk

GHJZZ:7cbHJWh:8YHJ]`g

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`] m	@cWUh]cb	D\cbY
?Yff]Y`>Ua Yg	_Yff]Y"^Ua Yg4 i bgk "YXi "Ui	K YXbYgXUm	A cfj Yb 6fck b	Ž*%(\$**'

Hi hcfg

B Ua Y	9a U]`	5j U]`UV]`]hm	@cWJhjcb	D∖cbY
A Ui fYYb A UW]b`Ym	a Ui fYYb"a UW[]b`Ym4 i bgk "YXi "	K YXbYgXUm	A cfj Yb 6fck b	f\$&Ł
	Ui -	-	-	-',),,

GWXcc`7cbHJWhi±bZcfa Uhjcb

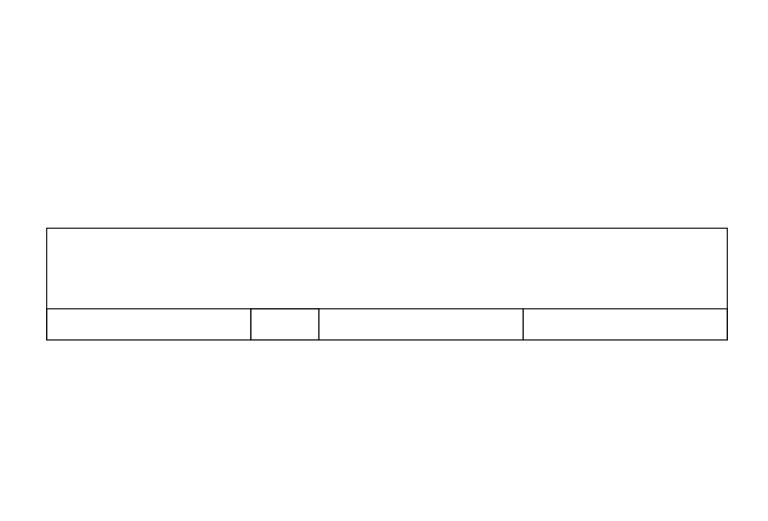
GWXcc``cZGcWJU``GWJYbWYg

Fcca '%) -

A cfj Yb 6fck b 7 &\$

Ya U]`. 'gcgg4 i bgk "YXi "Ui

d\cbY. '\$&'-',) '% \$+



 $ZYYXVUW_g YYH fi Vf]Wk] ``VY'Uj U] `UV'Y'hc'ghi XYbhg'Uhh\Y'ghUfhcZh\Y'Wci fgY'gc'h\Uhh\YmWUb'k cf_hck UfXg'gdYW] ZYX'ghUbXUfXg''$

5 https://bxubwww.Fyei]fya Ybhg

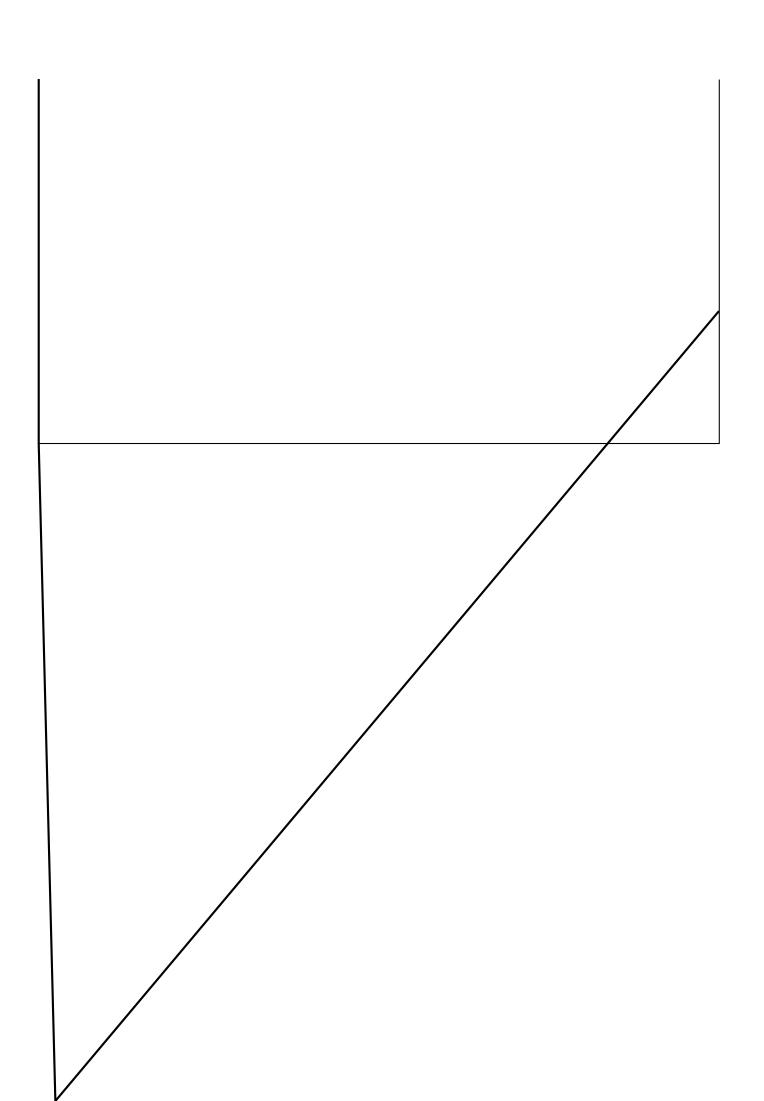
Ghi XYbhgʻUfYʻghfcb[`miYbWci fU[YX'hcʻUhhYbX'U```WUggYgʻUbX'fYj]Yk '`YWhi fY`fYWcfX]b[g"

7ci fgY'GWXYXi `Y

J]Yk 'WUgg'ha YhUV'Y

H]a YtUV`Y

8 UhY	HmdY	7 cbhYbh
K YY_'% '%'>i bY '! ') '>i bY	@YWhi fY	@YVMi fY
		C b`]bY'hi hcf]U`
		' '>i bY
		; fci d'%'("' \$'!)"()'da
		; fci d`&.^*!+"%) da
K YY_'&.', '>i bY'!'% >i bY	@YWn fY	
K YY_" ."%) ">i bY"!"%- >i bY	@YWh fY	@YVMi fY
		C b`]bY'hi hcf]U`
		' '>i bY
		; fci d'%'("' \$'!)"()'da
		; fci d'&.'*!+"%) da
K YY_'(.'&&'>i bY'!'&* >i bY	Cb`]bY'5Wfjj]hm	@YVVi fY
>1 01		K UHWX A W c`Xf]W_'j]XYc'! gYY A ccX`Y Zcf``]b_"'
K YY_').'&-''>i bY'!'' ''>i `m	@YWhifY	
		C b`]bY'hi hcf]U`
		%'>i `m
		; fci d'%'("' \$'!)"()'da
		; fci d'&.'*!+"%) da '
K_YY_'*.'*'>i `m'!''\\$'>i `m	C b`]bY'5Wf]j]hm	A W c`Xf]W_'j]XYc
K YY_'+.'% '>i `m!'%+'>i `n	n@YWhifY	C b`]bY'hi hcf]U`
		%) `>i `m
		; fci d'%'("' \$'!)"()'da



FYgci fWfg

DfYgWf]VYX F Ygci fWYg

@ b_g 'hc'k YY_`mfYUX]b[g'UfY'dfcj]XYX']b'A ccX`Y"'

FYWca a YbXYX FYgci fWYg

FYWca a YbXYX. F\cXYgžD"/ K U``]gž5"'f9Xg"Ł'&\$%%″5'DfUWfJWJ`; i]XY'hc': Ua]`mH\YfUdmžGhfi WhifYX; i]XY']bYg'UbX'? YmG__\``gfž' =D'7 ca a i b]\Whicbgž'A Y`Vci fbY"'

7ci fgY 9j U`i Uh]cb UbX 8Yj Y`cda Ybh

 $\label{eq:localization} $$ Mci f'ZYYXVUW_i'g']a dcftUbh''=bYYX'hc'_bck'\ck'=a][\ha U_Y']a dfcj Ya Ybhg'hc'h\]g'Wci fgY'''Mci 'k]` fYW']j Y'bchJZWUh]cbg'Ug'hc'k \Yb'UbX'\ck 'hc'dfcj]XY'ZYYXVUW_'''$

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<cbYglmUbX D`U[]Uf]ga

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i±i\WbihU_Yia Ubm Zcfa gžZfca iXYi]VYfUhYiW\YUh]b[ihciU\W]XYbhU`m\Wcdm]b[iZfca iUigci f\Wik]h\ci hiU\w_bck iYX[Ya Ybh'

IBGK [fcidg'd'U[]Uf]ga]bhc'h\Y'Zc``ck]b['WUhY[cf]Yg.

7 cdm]b[.'i g]b['h\Y'gUa Y'cf'j Yfmg]a]`Uf'k cfXg'hc'h\Y'cf][]bU`h\I hcf']XYU'k]h\ci hUW_bck `YX[]b['h\Y gci fW'cf'i g]b['ei chUh]cb'a Uf_g"'H\]g'U'gc'Udd`]Yg'hc']a U[Ygž'Ufh'UbX'XYg][b'dfc YWhgž'Ug'k Y``'Ug dfYgYbhUh]cbg'k \YfY'gca YcbY'dfYgYbhg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci h'WfYX]h'

- i bXYfgfUbX mci f'f][\hg'UbX'fYgdcbg]V]`]hJYg'Ug'U'gh XYbhUhl BGK
- VY`Uk UfY`cZd`U[]Uf]ga ž`Wcdmf][\hz'l BGK `Gh XYbh7cXY`cZ7cbXi WhUbX`5VWWdhUV`Y`l gY`cZ I BGK `=\forall H`F Ygci f\W\g`Dc`]\m\m
- VY 'Uk UfY 'cZh\Y 'ghUbXUfXg 'cZVY\Uj]ci f'Yl dYWYX 'cZYj YfmcbY ']b 'h\Y 'l BGK 'Wca a i b]hm
- `cWUHY 'gYfj]WYg'UbX ']bZcfa UH]cb'UVci hI BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZh\YgY'UfYUg'k]``VY'ZJa]`]Uf'hc'mci žch\Yfg'k]``VY'bYk"'; U]b]b['U'gc`]X'i bXYfgHJbX]b['cZU``h\YfY`UhYX'UgdYWhg'cZ9@&9'k]``\Y`d'mci 'a U_Y'h\Y'a cghicZmci f'ghi X]Yg'Uh'l BGK "'\\hd.##gi V'YWfi |XYg"`]VfUfm'i bgk "YXi "Ui #\`]qY#JVci hY`]qY

5WUXYa]W±bZcfaUhjcb

: cf`YggYbh]U``gh`XYbh]bZcfa~Uh]cb`fY`Uh]b[~hc.

- fYei Yghg Zcf Yl hYbg]cb/`UhY gi Va]gg]cbg [i]XY`]bYg/