

; GA!Gi ddcfh'i `"'8cVfY[c'DUghYfnU'%\$&#) ž'' %! (%* '? fU_Œk a cV]`Y`Ž(, '*\$, %\$+()) ž'B=D', %'''), *\$- F9; CB.'%, %\$, %''(kkk"[ga!giddcfh"bYh

66) 9Ugm GYfj JW Hcc \ O69GH O





JPPORT

66) '9UgmGYfj]WY'Hcc`'O69GH'QfHbZ]b]mnHYUa k']hfgibYk '_Ymh\Uh'U`ck g'mc'gYfj]WY'Bc_]U'd\cbYg"'Gca Yh]a Yg'W gmca Yf'WUb
Ug_ 'gUj Y'XUhU'Zfca 'XYUX'gYh'VYZcfY'fYZUg\`]h'cf'fYdU]f"'@_Y'd\cbYVcc_'cf'[U`Yfmcf'WU'YbXUf'cf""''gca Yh\]b['Y`gY"'5h'h\]g
gHU[Y`hYW\b]WUb 'WUb'' UgY'ci f'Xcb['Y'hc'a U_Y'VUW_i d'cZ'i gYZ ```XUHU'cZ'h\Y'W gmca Yf'UbX'ZUg\'h\Y'd\cbY'k]h\ci h'UbmdfcV'Ya g `Ug\`XYUX`d\cbYg`i g]b[`I G6`WWY`Y`FD@VUW_i dž`G(\$`895X`a cXY`WbhYbh`ZUg\]b[`fl`UZhYfZUg\`k Y`bch`\Uj Y`Ya dhm[U``Yfm'Ł UbX gc cb"

- 66) $^{\circ}$ 9Ugm $^{\circ}$ GYfj $^{\circ}$ JWY $^{\circ}$ hcc $^{\circ}$ g $^{\circ}$ ' $^{\circ}$ i b $^{\circ}$ cW $^{\circ}$ dfcWYgg
- 66) '9Ugm'GYfj]WY'hcc`'g`' 'fYdU]f'gi dYfXcb[`Y
- 66) '9Ugm'GYfj]WY 'hcc`'g`' 'fYUX'\Ug\'W!\$\$

BYk i dXUhYg. fli dXUhY &, "\$' "&\$%) Ł

j &"\$*

! I G6 ZUg\]b[]a dfcj YX

A H? I . 'BYk ': 'Ug\ I dXUhY 'dUW_U[Y

A H? I . 'Gi ddcfh'Zcf'`UhYgh'A H* &* \$ 'dfcXi Wfg']a dfcj YX

K D, I . '6cch'F YdU]f bck 'gi ddcfh'a cfY a cXY`g

FA!%\$' % 'AG'@ia]U') ' &O8GQ

FA!%\$' & 'A G'@ a]U') ' &OGGQ

FA!%\$' (. 'A G'@ a]U') ' &OGGQ

FA!%\$*,..'AG@a]U'(')08G@H5Q

FA!%\$*-. 'AG'@a |U'(') 08GQ

FA!%\$+\$. 'AG'@ia]U'(') OGG'@H5Q FA!%\$+% 'AG'@a]U'(') OGGQ

: cf`UWnjj UhY`bYk 'a cXY`g`mci 'g\ci `X`Xck b`cUX`UbX`]bghU````UhYgh'@ a]U`FYdU]f`DUW_U[Y`Zfca 'gi ddcfh'

! I gYf8UhU cdYfUh]cbg]a dfcj YX

A H? I . ': cfYbg]WA cXY'gi ddcfhYX'Zcf'a cfY'a cXY`g

 $\label{lem:condition} $$FA!\%\&\&`fBc_]U'\% $$L.`D\cbY6cc_'9l hfUWh]cb A H?l.`D\cbY6cc_'Yl hfUWh]cb']a dfcj YX`flX]ZZYfYbh'Z]fa k UfY'j Yfg]cbg'L$

! GYfj]WY cdYfUh]cbg]a dfcj YX

GYfj Yf GL ('UW)j UhYX Zcf L; &&' 'UbX 66) fbYk \Ug\ cb mL

Ckb'GL('WUfX'U'gc'gi ddcfhYX"'Bc'`]a]hUh]cbg'cb'acXY`g'YhW

! BUj]A UbU[Yf

BYk 'dfcXi Wfg']bWi XYX.



5UPPOR

j &"\$(
!'I gYf8UhU'cdYfUh]cbg']a dfcj YX
A H?I'.': cfYbg]WA cXY'gi ddcfhYX'Zcf'a cfY'a cXY'g
FA!%%('fBc_]U'%\$, Ł. 'D\cbY6cc_'9I hfUWh]cb
FA!%%) 'fBc_]U'&&\$L.'D\cbY6cc_'9I hfUWh]cb

! GYfj]WY cdYfUh]cbg]a dfcj YX $K\ D,\ I\ .\ 'K\ D,\ \%'\ HYgh\ A\ cXY'\ = b]h\ = a\ dfcj\ YXZ'U'gc'bck'\ dcgg]V'Y'\ [\ Yh'G97K\ = A\ 'X]fYWhmZfca\ '69GH'\ + A'X']fYWhmZfca' \ '69GH'\ + A'X' = b'A'X' = b'A$ $BLD. \ \ GYW f] hm F YdU] f \ \ fY`YUgYX`Zcf`BLD%" I \ \ D\ cbYg`` larger for the comparison of the$ 5``ck `FYdU]f`8Ua U[YX#?]``YX`gYWf]hm'UZhYf`6cch`FYdU]f`j]U`gca Y`^hU[`dfcXi Whg 5``ck' FYdU]f'8Ua~U[YX#?]``YX'gYW'f]hm'UZhYf'W'ghca~FCAg'UbX'gYW'f]hm'a~Ub]di~`Uh]cbg5 "ck FYdU]f gYW f]m UZhYf YA A 7 'W Ub[Y fYa dhm Z] L $H\]g\ ZYUhi\ fY\]bhYbXYX\ cb\ m\ Zcf\ fYdU]f\ cf][\]bU\ gYW\ f]hm\ XUhU''\ I\ g]b[\ \ h\]g\ Zcf\]\ Y[\ U\ U\ Wh]cbg\]g\ ghf]Wh\ m\ ZcfV]XXYb$ Gi ddcfhYX a cXY`g. Bc_]U'L'fFA!-, \$\text{L'!'J\\%'J\&'<K'j\Yfg]cb Bc_]U'L'fFA!%\$' \$\text{!'J'\%'J\&'<K'j Yfg]cb} Ch\Yf'FA!j Uf]Uh]cbg'fFA!-, %ž'FA!%\$(&ž'FA!%\$)' 'L'gi ddcfhYX'U`gc ! BUj]A UbU[Yf BYk 'ZYUhi fY'gi ddcfhYX. '8ck b`cUX'@ a]U'K D, '9BC'fG97K =A E]a U[Yg >i gh'gY`YVh'bYYX`FA!a cXY`ž'gY`YVh'YbcSgk 'UbX`Xck b`cUX`]h DfcXi Wg`k]h\`9BCGK 'gi ddcfhž']bWi XYX`]b`BUj]A UbU[Yf. FA!-+(ZFA!-+)ZFA!-+*ZFA!-++*FA!-+,ZFA!-+-ZFA!-, 'ZFA!-, (ZFA!-,)ZFA!%\$%\$ZFA!%\$%+ZFA!%\$%, ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$%-ZFA!%\$*-ZFA!%\$*-ZFA!%\$*-ZFA!%\$*-ZFA!%\$-\$ZFA!% BUj]A UbU[Yf 8 UhUVUgY i dXUhYX. 5````UhYgh`K D, ž`BLDž`A H?I `Z]fa k UfY`]bWi XYX A cfY'@a]U'K D, '89B=A'FY'YUgY']bWi XYX'Zcf'K D, 'a cXY'g ! 'C h\ Yf $! \ \ \hbox{$^{'}$} Ghi \ \ \hbox{$Z\!\!\!\!Z'} \ \hbox{$Z\!\!\!\!\!]} \ \ Yg'i \ \ dXUhYX$ $! \ "BLDF" 8f] j \ Yfg" i \ d`cUXYX" hc "gi \ ddcfh" UfYU$! 'Gca Y '6i [:]I Yg 'UbX 'W\ Ub[Yg j &"\$' I G6 ZUg\]b[]a dfcj YX ! `A H? I `: `Ug\ `9b[]bY `fYj]gYX JPPOR' Bc_]U'&%) 'fF A! '%%\$ž'F A! '%%&Ł'gi ddcfhYX ": `Ug\FYdU]f" `a cXY `]a dfcj YX ! :: `Ug\@cUXYfg'i dXUhYX GYfj]WY CdYfUh]cbg]a dfcj YX ! `A H? I . `: i ```Bc_]U &%) `fFA! %%%\$ ž FA! %%%ž FA! %%&Ł gi ddcfh $\label{eq:fdef} F\,D@\,cdYfUh]cbg^{\cdot,\cdot}\,F\,YUX\#\!K\,f]hY\#\!J\,Yf]Z\!m$: `Ug\ 'F YUX 'UVh]j UhYX A 51 = FYdU]f 5VM]j UhYX fl] Yg i d`cUXYX hc gi ddcfh UfYUŁ 7ci bhYf'FYgYh'UWh]j UhYX'ffYgYh'k fcb['GD'i b'cW_'WcXY'UhhYa dhgk GD! I b'cW_fj]U'6: L'cdYfUh]cb'UWh]j UhYX I gYf8UhU cdYfUh]cbg]a dfcj YX ! A H? I . :: cfYbg]WA cXY UVM]j UhYX Zcf Bc_]U &% D\cbY6cc_'YI hfUWh]cb'gi ddcfhYX'bck 'Zcf'FA!'%%\$z'FA!'%%&E'A!'%%& ! A H? I . D\cbY6cc_ 9I hfUVh]cb \mathbb{Z} cf \mathbb{B} c_]U &&)]a dfcj YX PPORT Ch\Yf ! 'Ghi ZZ'Z]`Yg'i dXUhYX

PPOR'

! Gca Y 6i [:] Yg UbX]a dfcj Ya Ybhg

j &"\$&

! 'I G6': `Ug\]b[']a dfcj YX A H? I . $: `Ug \ 9b[]bY i dXUhYX$ A H? I . 'BYk 'a cXY'g'gi ddcfhYX FA! % ('fBc_]U'\\$, '7BŁ FA! % 1 'FBc_]U' & \$ '7BŁ'! 'i bXYf' hYgh FA! %%&* 'fBc_]U'&&) '7BŁ $FA! \% \& `fBc_]U`\% $ `7BŁ`! `i bXYf`hYgh$ $\label{eq:fbc_jubble} FA! \%\%\$ `fBc_]U`\&\%) \ \ \ \&`! `i \ bXYf `hYgh$

FA! %%% fBc_]U'&%) Ł'! 'i bXYf'hYgh

A H? I . ': `Ug\ I dXUhY 'dUW_U[Y 'i dXUhYX 'hc '`UhYgh'j Yfg]cb

@ a]U'K d, I. 'I G6'6cch'FYdU]f']a dfcj YX'Zcf'gYj YfU''J &'"GU\UfU"'a cXY`g

! I gYf8UhU cdYfUh]cbg]a dfcj YX

AH?I.:cfYbg]W]g'CB

 $5``ck 'YI hfuVWi'd\cbYVcc_'Zfca 'Ubm'd\cbY'ghUhY. 'XYUXž'XUa U[YX'YhWV''] + (2.5)$ $5bm``Gh' \ \underline{W}_``\dot{z}``< Ub[\ cb``c[\ c```UbX`ch\ Yf`WUgYg`U`gc`gi\ ddcfhYX"$

=h`=G`BCH`dcgg]V`Y`hc`fYghcfY`WcbhUWhg`UZhYf`:G`ZcfaUh`UbX#cf`GYhh]b[g`FYgYh @CK WX.UbWY hc fYghcfY WcbhUWhg UZhYf 8 Y YhY Zfca 'a Ybi ff]h XYdYbXg cb d\cbY i gU[Y h]a Y UbX a Ubm'ch\Yf ZUWhcfgŁ Gi ddcfhYX A cXY `g. FA!-((žFA!-() ^{*}fBc_]U'%\$, Ł FA!-*-ž'FA!-+\$ž'FA!-+%fBc_]U'&&\$Ł L; &% .:: cfYbg]Wa cXY]a dfcj YX" 8 UhU UWW fUWm]a dfcj YX" ! 'GYfj]WY cdYfUh]cbg]a dfcj YX K D, I . K D, % HYgh! A cXY =b]h @UhYgh:K D, 'd\cbYg'i gYg'gdYV]JU``dUW_U[Ygž'k\]VX 'U``ck 'hc'YbhYf']b'HYgh! 'A cXY'' I gYZi ``Zcf`<K `hYgh]b[`UbX`VXYW_]b[z`k \Yb`d\cbY`WUb`bch'dck Yf`cb`cf`bch'k cf_`]b`Bcfa U`! A cXY"

HYgh'AcXY`Wub`VY`fib`Zfca`5`]jY`UbX`8YUX`acXYg`Ug`kY` HYgh'A cXY fYei]fY K =A]a U[Ygž Yj Yfma cXY`i gYg ck b]a U[Yg" A UbU[Yf Zcf h\ Ya k]``Zc``ck K D, I . GYfj]Wr a cXY gi ddcfh]a dfcj YX Zcf K D, %" 5```ZYUh fYgž]bWi X]b[FD@cdYfUh]cbgž UfY gi ddcfhYX K D, I . ::]I YX "Bcfa U A cXY" WbbYWh]cb cb gca Y d\cbYg A H? I . 'HYgh gi ddcfh' Zcf' F A ! \%\%\$ z' F A ! \%\%z' F A ! \%\%\.': cfa Uh': Gz' F YUX '=b Zcz' GY' ZHYgh

BUj]A UbU[Yf 8 UhUVUgY i dXUhYX 5````UhYgh`K D, ž`5g\Už`A H?I 'Z]fa k UfY']bWi XYX @ a]U'K D, '89B=A 'FY'YUgY']bWi XYX'Zcf'a cgh'K D, 'a cXY'g BYk 'dfcXi Wfg'gi ddcfhYX. FA!%\$' % 'AG'@ a]U') ' &OBGQfK D, I Ł FA!%\$' & 'AG'@ a]U') ' &OGGQfK D, I Ł FA!%\$'(.'AG'@a]U')'&OGGQfKD, IŁ FA!%\$*, 'AG'@a]U'(') 08G'@H5QfK D, I Ł FA!%\$*- 'AG'@a]U'(') 08GQfK D, I Ł FA!%\$+\$. 'AG'@a]U'(') 06G'@H5QfK D, I Ł FA!%\$+% 'AG'@a]U'(') 06GQfK D, I Ł FA! % Bc_]U'& OBGQTAH? IŁ FA! %%%% 'Bc_]U'&%) OGGQfA H? I Ł

5UPPOR

SBOK.

BUj] A cXY`gʻ7ci bh '(* + '! '5```YI]gh]b['Bc_]U#A Gʻ@ a]U':]fa k UfYgʻ]bg]XY

Ch\Yf

! BUj]A UbU[Yf

! '=b]'i dXUhYX'UbX'fYj]gYX

! '5bW]Ybh'I : G'Vi ['Z]I Yg'fl66) 'ZUg\#gYfj]WYŁ

! 'Gca Y '6i [:] | Yg 'Ub X 'W Ub [Yg

FA! % . 'Bc_]U' & \$ 07 B Q f A H? I Ł FA! % *. 'Bc_]U'&&) O7 BQfA H? I Ł

j &"\$%

! 'I G6': `Ug\]b[']a dfcj YX

@ a]U'K D, I 'I G6'6cch'F YdU]f']a dfcj YX

@ a]U'J %'d\cbYg. 'UXXYX'YA A 7 ']b]h'W\YW_'! '< K 'Yffcfg'XYhYWh]cb

@ a]U'J & d\cbYg.

5XXYX'<K 'Yffcfg'XYhYWnJcb =a dfcj YX'@ a]U'-' \$ž'@ a]U'%\$&\$'fYdU]f

! GYfj]WrcdYfUh]cbg]a dfcj YX

 $BLD. \ \ GYW f] hm 6 UW i \ d \] a \ dfcj \ YX \ ! \ L \ Z'L \ @'L \ \& \ Z'L \ @' \ ;$

BLD. 'GYW f]hmFYghcfY'fY`YUgYX'! 'Lž'L@ž'L&ž'L@(;

! BUj]A UbU[Yf

BUj]A UbU[Yf 8 UhUVUgY i dXUhYX

5````UhYgh'K D, ž'5g\Už'A H? I 'Z]fa k UfY']bWi XYX

@ a]U'K D, '89B=A FYYUgY']bWi XYX'Zcf'gca Y'a cXY`g

BYk 'dfcXi Wrg'gi ddcfhYX.

! FA!%\$+, . '@ a]U +') OGdf]bhQfK D, "%L

! 'C h\ Yf

! '=b]'i dXUhYX'UbX'fYj]gYX

! 'Gca Y'Vi [Z]I Yg'UbX'W\Ub[Yg





! :: I ']bZc 'YI hfUWh]cb ']a dfcj YX ! "Ghi ZZ"Z]`Yg"i dXUhYX

) SUPPOR

SUPPOR'

5UPPOR

j %"- ,

:i```Bc_]U'% \$'gi ddcfh'UbX'a cfY.

! 'Gca Y'6i [:] I Yg'UbX']a dfcj Ya Ybhg

! 'I G6 'ZUg\]b[']a dfcj YX ! `A H? I `: `Ug\ `9b[]bY `fYj]gYX $! \ K \ D, \ I \ : \ `Ug \ `9b[\]bY \ F \ Yj \]gYX$!::`Ug\@cUXYfg`i dXUhYX

! '=b]'i dXUhYX'UbX'fYj]gYX

! 'GYfj]WY'CdYfUh]cbg']a dfcj YX

! 'K D, I . 'K D, "%'7\YW_#=b7c cdh]cb UXXYX

! BLD. < K FYj]g]cb WXYW_]a dfcj YX

 $F\,D@^{\cdot}cdYfUh]cbg.\,\,^{\cdot}F\,YUX\#K\,\,f]hY\#J\,\,Yf]Z\!m$

: `Ug\ `F YUX `UWh]j UhYX

A 5I = FYdU]f 5Wh]j UhYX fl] Yg i d`cUXYX hc gi ddcfh UfYUŁ

7ci bhYf'FYgYh'UWh]j UhYX'ffYgYh'k fcb['GD'i b'cW_'WcXY'UhhYa dhgŁ

GDI b`c \underline{W} 'fl6: Ł'cdYfUh]cb'UVh]j UhYX

! BUj]A UbU[Yf 8 UhU6UgY i dXUhYX

 $5````UhYgh@ia]Už`A H?I \check{z}`5g\U`UbX`BLD`Z]fa k UfYg`]bWi XYX$

BYk 'a cXY`g']bWi XYX.

FA!-, (. @ a]U', ' \$ fK D, "%L FA!-,). @ a]U', ' \$ 0@H9QfK D, "%L

FA!%\$',.'@ia]U'+') O8GQfK D, "%L

FA!%\$'-.@a]U'+')OGGQfKD,"%ŁFA!%\$(\$.@a]U'+'\$'fKD,"%Ł

8 UhU6UgY fYj]gYX

HchU`BUj]AUbU[Yf'acXY`g'Wcibh'((*

! 'C h\ Yf

!::I 'J Yf]Zm'UbX']bZc'YI hfUWh]cb']a dfcj YX

! 'Ghi ZZ'Z]`Yg'i dXUhYX

! '=b]'i dXUhYX'UbX'fYj]gYX

! 'Gca Y'6i [:] l Yg'UbX']a dfcj Ya Ybhg

j %"- +

I G6": `Ug\]b["]a dfcj YX

A H? I . 'Gi ddcfh'Zcf'Zc``ck]b['A H? * &* $$^d \cbYg'fY'YUgYX$

FA!%\$'). Bc_]U'%'\$ 8G FA!%\$'*. Bc_]U'%'\$ GG

FA!%\$' +. 'Bc_]U'%' \$'GG

 $\label{eq:GiddcfhYX} GiddcfhYX^TZUg\\ `acXY. `: i ```: `Ug\\ `\check{z}`@Ub[iU[Y^TDUW_U[Y^T]\ Ub[Y^T]) \\$

A H? I . "F YdU] \bar{f} ": `Ug\ "`a cXY`]a dfcj YX

A H? I . $\dot{}$: `Ug\@cUXYfg'i dXUhYX'hc'`UhYgh'j Yfg]cb

BLD&. $=a dfcj YX': Ug': Yg'VXYW_]b[UbX'VXU]b'j Yf]Zm$

! GYfj]WY cdYfUh]cbg]a dfcj YX

A H? I 'GYfj]WY'a cXi 'Y']a dfcj YX'fl"7fmghU'"'dfc^YWh'gi ddcfhL

AH?I. '=a dfcj YX FD@z: `Ug\ FYUXz FYdU]f A 5I =z: cfa Uh: G cdYfUh]cbg

BLD'5bXfc]X'AcXi 'Y']a dfcj YX

BLD. =a dfcj YX Fcch dfcWXi fY

 $\label{eq:bld} $$BLD. $$ '=a dfcj YX'; cc[`Y'GYfj]WY'] bghU``Uh]cb'cb'`UhYgh'Z] fa k UfYg. $$$

&"%"\$"%%"UbX'i ddYf'! Bc_]U'`c[c'ghi W_'Vi[

! BUj]A UbU[Yf 8 UhU6UgY i dXUhYX

5````UhYgh'@ a]Už'A H? I ž'5g\U'UbX'BLD'Z]fa k UfYg']bWi XYX

A cfY @ a]U "7 mUb":]fa k UfYg]bWi XYX fK D, "%L

8UhU6UgY fYj]gYX

BYk 'DfcXi Wfg']bWi XYX.

FA!%\$'). Bc_]U'%' \$'08GQfAH?IŁ

FA!%\$' +. 'Bc_]U'%' \$'OGGQfAH?IŁ

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312 DR

! 'Ch\Yf =b]'i dXUhYX'UbX'fYj]gYXž'U````UhYgh'a cXY`g']bWi XYX Ghi ZZZ]`Yg'i dXUhYX Gca Y'Vi [ZJI Yg'Uh'U``

j %"- *

! GYfj]WY CdYfUh]cbg]a dfcj YX

 $! \ K \ D, \ I \ . \ K \ D, \ "\% \ d \ cb Yg \ bcfa \ U \ \#h Ygh \ a \ cXY \ Wcbb YWh] cb \] a \ dfcj \ YX$

! '586'`UmYf']a dfcj YX Gca Y'Vi [ZJ Yg'UbX']a dfcj Ya Ybhg

! BLD'5bXfc]X'gi ddcfn']a dfcj YX 7cbbYWjcb']a dfcj YX Fcch'dfcW'Xi fY']a dfcj YX. BLD'&"\$Ł ; cc['Y'5ddg'dUW_U[Y'i dXUhYX. BLD'&"\$ GYW f]lm'6UW_i d']a dfcj YX

!'I gYf'8UhU'cdYfUh]cbg']a dfcj YX G(\$'fl66) #L[c'X*% L.'D\cbY6cc_'YI hfUWh]cb']a dfcj YX.'8]fYWh#8i a d G(\$'flL[c'X&%' L.': cfYbg]Wa cXY']a dfcj YX G*\$.': cfYbg]Wa cXY']a dfcj YX

! BUj]A UbU[Yf'8 UhU6UgY'i dXUhYX 5```UhYgh'@ a]Už'A H? I ž'5g\U'UbX'BLD'Z]fa k UfYg']bWi XYX @ a]U'"7 mUb"':]fa k UfYg'UXXYX. 'K D, "% 8 UhU6UgY'fYj]gYX HchU`BUj]A UbU[Yf'a cXY`g'Wti bh'((%

! 'Ch\Yf Ghi ZZ']Yg'i dXUhYX =b]'i dXUhYX'UbX'fYj]gYX Gca Y'6i [:]I Yg'UbX']a dfcj Ya Ybhg

j %"-)

!'I G6': `Ug\]b[']a dfcj YX BLD. '=a dfcj YX'UbX'FYj]gYX'a cXY``XYhYW¶cb'fl8YUX'a cXYŁ

! `GYfj]\W``cdYfUh]cbg`]a dfcj YX A H?I. `=a dfcj YX`gi ddcfh`cZ`UhYgh': K g`]b`gYfj]\W``a cXY A H?I. `=a dfcj YX`7ci bhYf`FYgYh BLD. =a dfcj YX`gYW f]\m\VU\U_i d`fLBD&"\$\L

! I gYf8UhU cdYfUhjcbg ja dfcj YX
BLD. =a dfcj YX D\cbY6cc_'CdYfUhjcbg fBLD%" | #BLD&" | Ł
A H? I. =a dfcj YX GUZY I gYf7cXY FYgYh
G(\$. =a dfcj YX D\cbY6cc_'YI hfUVNjcb Zfca 'gca Y'66) 'a cXY g'f8]fYWh'UbX Zfca '8 i a dŁ

! BUj]A UbU[Yf'8UhUVUgY'i dXUhYX 5```@UhYgh'K D, I ž'5g\Už'A H? I ž'BLD'Z]fa k UfYg']bWi XYX BYk 'DfcXi Whg'UXXYX. FA!%\$*% 'Bc_]U'L@'O@H9QfBLD'&"\$Ł

! 'Ch\Yf K D+I 'D\cbY6cc_'9I hfUWh]cb'gYfj]WY'Z ``mfYghcfYX =b]'i dXUhYX'UbX'fYj]gYX L &'Xf]j Yfg'Zcf'K]bLD'i d`cUXYX'cb'gi ddcfh Gca Y'Vi [Zl Yg'UbX']a dfcj Ya Ybhg

Bc_]U'L&'gi ddcfh'. '5bXfc]X'ž'GYfj]Wfž': `Ug\

! 'I G6 'ZUg\]b[']a dfcj YX

i %"- (

SUPPORT

UPPOR

! `5bXfc]X`. `Bc_]U`L&`: `Ug\]b[`gi ddcfhYX`f8YUX#5`]j Y`a cXYŁ`! `K cf`X`:]fgh* 8i Y`\][\`Wci bh`cZ`Z]`Yg`! `Ghfcb[`mFYWca a YbXYX`i gY`69GH`BUj]A UbU[Yf`hc`Xck b`cUX`: K ftg`Zcf`h\cgY`d\cbYg ! A H? I : . :]I YX d\cbY XYhYWh]cb]b gca Y WUgYg ! 'GYfj]WY 'CdYfUh]cbg']a dfcj YX ! ':]fa k UfY 'gY`YVW]cb 'UbX` < K 'fYj]g]cb 'XYhYVW]cb ']a dfcj YX"' < K 'fYj]g]cb 'k Ufb]b['bch'g\ck b 'cb 'bcb! UZZYVWYX d\cbYg $! `L \& `D \land cbYh `dfchcWc ``gi ddcfhYX `fl`U ``ck `k cf_'k]h \land `d \land cbYž']Z' I G6`XYV i [`]g`cZZ' Ł i L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `d `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `cbYz']Z' I G6`XYV i [`]g`cZZ' L (cbYb) `gi ddcfhYX `fl`U ``ck `k cf_'k]h `cbYb `gi ddcfhYX `fl`U ``ck `k cf_'k]h `cbYb `gi ddcfhYX `fl`U `cbYb `gi ddcfhYX$! `Gk]hW\ 'Hc '586'! `U``ck `W\ccgY`a cXY`VYhk YYb `D\cbYh#586'Zcf'Bc_]U`5bXfc]X`d\cbYg ! 586 ``UmYf`la dfci YX 5 X X Y X `GYW fY `586 `WcbbYWh] cb `gi ddcfhGca Y Vi [Z]l Yg UbX]a dfcj Ya Ybhg ! BLD 5bXfc]X gi ddcfh]a dfcj YX. ! BLD % d`Uhzcfa gi ddcfh UXXYX a dfcj YX 586 @UmYf hc gi ddcfh BL D%"% d\cbYg fl BYk 586 Xf]j Yfg U`gc fYei]fYX L $\label{eq:cbY6cc_hfUbgZYf'Zfca} $$ LBD\%'' $ hc'BLD\%'' $ iddcfhYX $$$ $\label{lem:cohubxu} Fcch`UbX`U```fYgh`ZYUhi fYg`hYghYX`UbX`]a dfcj YX`cb``UhYgh`Bc_]U`L``UbX`Bc_]U`L@: K figation of the cohomology of t$ CbY! 7`]W_'fcch'ž'fYgh'cdYfUh]cbg'BCH'fYei]fY'Fcch ! BLD & \$ d Uhzcfa giddcfh UXXYX ff 5CGD ("' WcfY L Fcchigi ddcfhYX =bghU```; cc[`Y`GYfj]WYg`fl'%`W]\W_'\L'! Bc`Fcch`FYei]fYX GYW f]hm6UWid!BcFcchFYei]fYX D\cbY6cc_'6UW_i d#FYghcfY'fK Ufb]b['z'BLD&"\$'UbX'BLD%"I 'WUbfh'VY'Wfcgg!kf]hhYb\t'!Bc'Fcch'FYei]fYX Ib`cW_'ZYUhifY'igY`Ygg'ž'Vih`Wbb'VY'igYX'hc'fYacjY'Zcf[chhYb'WcXY'fFYei]fY'CB'IG6'8YVi[']b'gYhh]b['Zcf'LBD&"\$'d`UhZcfaŁ'! Bc'Fcch'FYei]fYX ! $^{\circ}$ BUj]A UbU[$^{\circ}$ Yf $^{\circ}$ 8 UhU6UgY $^{\circ}$ i dXUhYX 5````UhYgh'@ a]U'ž'A H?I 'ž'5g\U'UbX'BLD'Z]fa k UfYg']bWl XYX 8UhU6UgY fYj]gYX BYk 'a cXY`g']bWi XYX'. FA!-&+'.'@'a]U'-&-O=WcbQfK D, "%L FA!%\$%+'.'@'a]U')'\$OGGQfK D, "%L FA!%\$% '. '@ a]U') ' \$OGGO:fK D, "%Ł 5UPPOR FA!%\$% '. '@ a]U')' \$08GQfK D, "%Ł FA!%\$&\$'. @ a]U')' \$08GQfK D, "%Ł FA!%\$(&'.'Bc_]U'L@fBLD%"%L HchU`BUj]AUbU[Yf'acXY`g'Wcibh'.'('-A cgh'dck YfZi `ž'ZJJghž'ghUbXU`cbY 'UbX'YUgm'BUj]A UbU[Yf° ! 'C h\ Yf ! BYk 'I G6'Xf]j Yfg'Zcf'5bXfc]X'd\cbYg'i d`cUXYX'hc'gi ddcfh $! `L\&`: `Ug\]b[`Xf]j \ Yfg`i \ d`cUXYX`hc`gi \ ddcfh$!::]fa k UfY j Yf]Z]WUh]cb]a dfcj YX fBLD ž @ a]UŁ ! Ghi ZZZ]Yg i dXUhYX ! '=b]'i dXUhYX'UbX'fYj]qYX ! 'Gca Y'6i [:] Yg j %"- ' SUPPOR' I G6 ZUg\]b[]a dfcj YX ! BLDZUg\ Yb[]bY fYj]gYX

! 'A H? I 'ZUg\ 'Yb[]bY 'fYj]gYX ! :: `Ug\@cUXYfg`i dXUhYX



GYfj]WY cdYfUh]cbg]a dfcj YX ! 'A H? I . 'GYfj]WY cdYfUh]cbg fYj]gYX ! "A H? I . "GUZY" I gYf7cXY" F YgYh" Zcf "Bc_]U" %\$, "]a dfcj YX ! 'BLD. '5bXfc]X 'A cXi `Y 'fY`YUgYX $I g Y g `ck b `586 ``Um Y f \check{z} `Xi f] b [\ \bar{g} h U f h `69 G H `k] ```W X Y \underline{W} \ Z c f `U V h] j \ Y `586 `Ub X `Ug_ `d Y f a \] g g] c b `hc `W c g Y `] h$ $5i\ hc `WcbbYWh'hc `d\cbY'! `K\ cf_'k\]h\ `Bc_]U `5bXfc]X `Ug``]_Y `Ubm'ch\Yf `Bc_]U `d\cbY'! `K\ cf_'k\]h\ `Bc_]U `SbXfc]X `Ug``]_Y `Ubm'ch\Yf `Bc_]U `d\cbY'! `K\ cf_'k\]h\ `Bc_]U `SbXfc]X `Ug``]_Y `Ubm'ch\Yf `Bc_]U `d\cbY'! `K\ cf_'k\]h\ `Bc_]U `SbXfc]X `Ug``]_Y `Ubm'ch\Yf `Bc_]U `d\cbY'! `K\ cf_'k\]h\ `Bc_]U `SbXfc]X `Ug``]_Y `Ubm'ch\Yf `Bc_]U `d\cbY'! `K\ cf_'k\]h\ `Bc_]U `SbXfc]X `Ug``]_Y `Ubm'ch\Yf `Bc_]U `SbXfc]X `Ubm'ch\Yf `Bc_]U `SbXfc]X `Ubm'ch\Yf `Bc_]U `SbXfc]X `Ubm'ch\Yf `Ubm'ch\$ 5i hca Uh]WZ]`Y`gY`YWh]cbž`k \Yb`d\cbY`WcbbYWhYX CdYfUh]cbg.

"FYUX'=bZc'! fYUX']bZcfa Uh]cb'UVci h'd\cbY'fBLDž'5bXfc]X'JYfg]cbž'DfcXiVM'V&XYž'=A9=ž'<K fYj]g]cbŁ

"6UW_i d'gYWf]hm! VUW_i d'd\cbY'i b]ei Y'XUhU'fgZgž'bj Ł
"=bghU``; cc[`Y'GYfj]WYg'!]bghU``; cc[`Y'D`Um'UbX fYgh'ghi ZZ'fBc'Fcch'fYei]fYXŁ

"Fcch"! `Fcch"d\cbY" `CbY! WJ\W_`UbX`ZUgh" `Bc`Ubm'gdYWJU``acj Yg`fYei]fYX"

"D\cbY6cc_`6UW_i d#FYghcfY`!`6UW_i d`D\cbY6cc_`Zfca `d\cbY`UbX`fYghcfY`]h"

 $\label{lem:condition} 5\gc\dcgg]V'Y'hfUbgZYf'D\cbY6cc_'VYhk\ YYb'BLD'd\cbYg'''fBc'Fcch'fYei\]fYXL$

"FYgYhDUggkcfX#D]b@cW_!FYacjYGWfYYb@cW_"fBcFcchfYei]fYXŁ

>i gh:WcbbYWhid\cbY:k]h\:GWfYYb@cW_'hc:D7:k]h\:fi bb]b[:69GH:UbX:dfYgg:TFYgYh:GWfYYb@cW_T"

 $52hYf^*fYVcch^*D\backslash cbY^*k\]^{**}bch^*\backslash Uj\ Y^*cW\underline{g}^*UbX^*U^{**}I\ gYf8\,UhU^*k\]^{**}VY^*i\ bhci\ W\&YX''$

TFYgYh; cc[`Y`5WWcibhT'!`fYgYhD\cbY6cc_'U`gc"'6UW_id']hZ]fghž']Z'bYYX" "D\cbY`AcXY`7\Ub[Y`!`U``ck`gk]hW\`d\cbYacXY`fFYgYhž`FYVbjYfmž`6cch`cUXYfL

5UPPOR

JPPOR

5UPPOR

Gi ddcfhYX A cXY `g. FA!-, \$. 'Bc_]U'L 'fl/%'/ 'J &Ł

FA!-, % 'Bc_]U'L

FA!%\$' \$. 'Bc_]U'L@fU%'/ 'J&Ł

FA!%\$)'. Bc_]U'LŽ

Gi ddcfhYX': K g. '5``'W ffYbh'BLD'j Yfg]cbg

BUj]A UbU[Yf'8UhUVUgY'I dXUhYX

! '5```@UhYgh`K D, I ž'5g\Už'A H? I ž'BL D'Z]fa k UfYg']bWi XYX

!~8UhU6UgY~Zi~mfYj~]gYX

BYk 'DfcXi Wfg'UXXYX.

FA!-+(.'@ia]U'*') O@H9QfK D, "%L

FA!-+). @ a]U'*') OGGQfK D, "%£

FA!-+-. @ a]U'*' \$08 GQfK D, "%L FA!-, % 'Bc_]U'L' fBLD'% %L FA!%\$\%\$. @ a]U'*', Q; QfK D, "%L

FA!%\$% . Bc_]U'L&O8GQfBLD'&"\$Ł

FA!%\$&+. '@ a]U'*' * Q(; QfK D, "%L

FA!%\$(). '@ a]U'-' \$ fK D, "%Ł

Ch\Yf

=b] i dXUhYX UbX fYj]gYX

=bWi XYX`Fcch`UbX`; G`Z]`Yg`Zcf`BLD`d\cbYg

 $BYk~^{8}f]j~Yfg'i~d`cUX'hc'gi~ddcfh'UfYU'fGhf]WhmfYei~]fYX'Zcf'bYk~^{K}~D,~I~^{d}\cbYgL$

Gca Y'Vi [Z]I Yg'UbX']a dfcj Ya Ybhg

j %"- &

I G6 ZUg\]b[]a dfcj YX

! `A H? I `: `Ug\ 9b[]bY `fYj]gYX

8ck b@cUX'U[Ybh'Zcf'Bc_]U'%\$, ž'Bc_]U'&&\$'i dXUhYX

: `U\ =8 'XUhUVUgY'i dXUhYX

 $7cXY8YZ]bY`VUgY`idXUhYX`fPffcf`\UbX`]b[Ł$

 $!"BLD": `Ug\ 9b[\]bY"I dXUhYX$

< K 'F Yj]g]cb 'W\Y_' 'Ub\X' j \Yf]\Zm'\Zcf'5\``BLD'dfcXi \Wrg'fL\#L\Z\#L@\L

BUj]A UbU[Yf 8 UhUVUgY I dXUhYX

! '5```@UhYgh'K D, I ž'5g\Už'A H? I ž'B L D'Z]fa k UfYg']bWi XYX

! '8 UhU6UgY fYj]gYX

=b] i dXUhYX UbX fYj]gYX

Gca Y'Vi [Z]I Yg

j %"- %

I G6 ZUg\]b[]a dfcj YX ! 'K D', "%': `Ug\ `Gi ddcfh'fY`YUgYX

! 'K D', "\$': 'Ug\]b['FYj]gYX'fl'K]bL D'8 YUX'A cXY'Vi ['Ł

! `A H? I `: `Ug\ 9b[]bY `fYj]gYX `f\A H? * &* \$ `gi ddcfh`]a dfcj YXŁ

! 'A H? I '"F YdU]f': 'Ug\" 'a cXY']a dfcj YX'fA H? * &* \$ 'gi ddcfhL

I b`cW_`CdYfUh]cbg`. !`A H? I.`5Wh]j UhYX`@c[`FYUX`Zcf`%)`X][]hg`A H?*&*\$`d\cbYg.`Bc_]U`&&)`UbX`g]a]`Uf`a cXY`g

GYfj]WY cdYfUh]cbg]a dfcj YX

! `A H? I . `GUZY `I gYf7cXY `fYgYh `Zcf` A H? * &* \$ `fY`YUgYX

A H? * &* \$ bYk k Umhc fYa cj Y WtXY"

5```gYW f]hm`gYhh]b[g`k]```VY`gYh`hc`XYZUi``h'

7cXY'k]``VY'fYgYh'UZhYf'hc'XYZUi `h'\&'()

Bc bYYX Zcfa Uh'd\cbYž Bc UbmVmhY cZI gYf8 UhU `cgh'

! A H? I . F D@cdYfUh]cbg]a dfcj YX

! 'A H? I . 'F YdU]f'A 5I = cdYfUh]cb']a dfcj YX'. 'Bc_]U'&&) 'gi ddcfhYX

! A H? I . GYW f]hmJ Yf]Zm =a dfcj YX fA H? * &* \$ gi ddcfh fYj]gYXŁ

 $! \ K \ D, \ I \ . \ `Gi \ ddcfh'Zcf'K \ D, \ "\%'d\ cbYg']b \ `Bcfa \ U`A \ cXY'fFYUX' = bZcž'BJA' \ cdYfUh]cbgk \ A \ `CdYfUh]cbgk \ A \ `CdYfU$

BUj]A UbU[Yf 8 UhUVUgY I dXUhYX

LIPPOR ! '5```@UhYgh'K D, I ž 5g\ Už A H? I ž B L D Z]fa k UfYg]bWi XYX

! '8 UhU6UgY fYj]gYX

! 'DfcXi Wh'GY`YWh]cb'UZhYf'Xck b`cUX'fYj]gYX

! '5g\CG'DDA']X'8UhUVUgY'I dXUhYXž'%\$&\$'fYWcfXg

BYk 'DfcXi Wfg'UXXYX.

FA!-+(. 'Bc_]U'@ a]U'*' \$ 'GG'OA CB9MD9BBM@H9OfK D, I Ł

Ch\Yf

=b]'i dXUhYX'UbX'fYj]gYX

 $Gi \ ddcfh' \ Zcf'(!X][\]h']bXYI''fFA!\%II \ L']b'AH?I \ Z'K \ D, \ Z'BLD': \ `Ug\ HUVg' \ Z]IYX$

::I 'j Yf]ZJWUh]cbž': Ugh7\YW_ž'DfcXi Wh'GY`YWh]cb']a dfcj YX'fK D, "%L

BYk 'I G6'Xf]j Yfg'Zcf'K D, I ž'A H? I ž'BL D'd`UhZcfa g'i d`cUX'cb'gi ddcfh'UfYU

Gca Y'Vi [Z]I Yg

`]ghˈcZidXUhYgʻMci'WubʻZ]bX`cbʻh\]gʻk YVdU[Y.`\<u>hhd.##kkk"]bZ|b]hm\VYqh"Wca#3dU[Y1bYk</u>g

7ca dUfY 66) '9Ugm'GYfj]WY Hcc`k]h\ch\Yf'dfcXi Wg

69GH`>5: '7mWcbY`AI_YmI b]j YfgU``6cI `A H! VcI `GUj Y`i gYf`XUhU`fb])Wi fYgž`d\chcž'j]XYcž`fYWcfX]b[gŁ´Ž '! '! '! '! 'F YUX#k f]hY d\cbYVcc_fGYf]Yg (\$LZ#Z!#!#\Z#Z!#!#\Z#Z!###\H\FYUX#kf]NYd\cbYVcc_fGYf]Yg (\$\bYk.L'\z*+\$\$WYhWL\Z#Z!#\!#\!#\!#\!#\!#\!#\!#\!#\ WtXY'dUggk cfX'G(\$#G*\$'flGma V]Ubt'Ž#Ž'!#|'!#|'!#|'!#|'!#|'FYUX'GA G#A A G'G(\$#G*\$'flGma V]Ubt'Ž#Ž'!#|'!#|'!#|'!#|'|#|'FYUX Ž!!!TG6:587:hYghž:B7? YbhYf:Ž#Ž!#Ž!#Ž!#Ž!#Ž!#Ž!#Ž!#Ž:]YGmghYa:cfaUh#5ihc#Bcb!XYghfiWhjjY:fZcfaUh::GL:Ž#Ž#Ž!Ž#Ž# # Z # # | Z # # | Z # # | Z # # | FYgYhgYhh]b[g Z Z Z Z Z Z Z Z G (\$ bcfa U #XYUX | G6 ZUg\]b[Z Z Z Z Z Z Z G * \$ bcfa U #XYUX | G6 $ZUg \setminus [b[\ \check{Z} \ \check$ FUdi MJa U'I G6 ZUg\]b[Ž #Ž #Ž !# #Ž !# #Ž #Ž !#Ž #Ž !#Ž #Ž !#Ž #Ž !G(\$ i gYf XUhU YI hfUWf)cb Z !!!!!!! G(\$ 87H(Ž Ž i gYf XUhU YI hfUWh]cb 87H(ŽŽŽŽ!!!!!!K 8&id\cbYVcc_`YI hfUWh]cb #K 8&id\cbYVcc_ifYdU]f`fb`X`Gma V]UbŁŽ!!!!!!!8958!hc!HYgh fk]h\ci_h'ZUg\z`UXX]h]cbU``<K Ł'Zcf'a cgh'G*\$#bYk 'G(\$`Ž'!'!'!'!'! G6'FD@fYUX]b['Zcf'fUd'[j(#VfcUXVca a #fUdi mUa U'Ž'!'!'!'!

'Gi ddcfhYX'A cXY`g'/ ': YUhi fYg

: `Ug\]b[.

 $! ``U```66V) ``d\cbYgz`]bWi X]b[``UhYgh`FUdi mUa Uz`6fcUXWca a ``UbX`ch\Yf`XYj]Wfg$

! 'XYUX'I G6'Z'Ug\]b[

! bcfa U`I G6 fU`]j YŁ ZUg\]b[

! '66) 'ZUgh'ZUg\]b[

! 'W' ghca 'ZUg\]b[

 $! \ "8 \ YUX! \ hc! \ HYgh" cd Yf Uh] cb$

! 'fYUX'F D@'|]U'I G6

&' ' ž´+' +\$ž´' \$\$ž´*&+\$ž´*&, \$ž´*&, , ž´+' -\$ž´*) \$\$g`]XYž´*) \$\$WUgg]Wž´+-\$\$df]ga ž´+) \$\$ž´+%&\$Wž´+' %\$gi dYfbcj Už´+) %\$gž´+* %\$gž

5```FA!acX]Z]WUh]cbg'cZ'h\YgY'acXY`g'UfY'gi ddcfhYX'hcc"

Gi ddcfhYX A cXYg ! 8958 I G6 # Bcfa U`: `Ug\]b["

G* \$.

B+*žB+,žB+-žB, &B, *žB,)žL*ž), \$\$\(\))' \$\(\)B-+\(\)E-+\(\)B'B-+\(\)E'B-+\(\)E'B') \$\(\)\$\(\)E'B' -+\(\)E'B' \\)E' \(\)E' \(\)E 9+) ž'* %\$bž'* &&\$Wz') ' ' \$HJ ž') +' \$L A ž'* %&\$WUgg]Wz'* %&%Wz'* %(Wz'**) \$ž'9+%z'9+%l ž'B, %l, [V"""

5```FA!a cX]Z]WUh]cbg'cZ'h\YgY'a cXY`g'UfY'gi ddcfhYX'hcc"

Gi ddcfhYX A cXYg! 8958 I G6 # Bcfa U`: `Ug\]b["

9l hYbXYX : YUhi fYg ! 7i ghca : `Ug\]b["

G* \$ 5D9.

' \$ž`, \$ž`**, %ž`B+\$ž`B+&ž`B+' ž`B+) ž`B++ž`B-\$ž`B- %ž`B- &ž`B-) ž`9-\$ž`B-' ž`B-']ž`9*\$ž`9*%ž`9*) ž`9*%]ž`9*\$ž`B, \$ž B-)!,; V"

5 FA!a cX]Z]WUh]cbg cZ'h\ YgY a cXY g'UfY gi ddcfhYX hcc'

Gi ddcfhYX A cXYg ! Bcfa U`: `Ug\]b["

8UhJ 6UW_i d !

GA Gž'; U``Yfmž'DUggk cfXgž'D\cbY6cc_ž'7U`YbXUf'6UWid.

G(\$. '5@@'A C89@G.

&'ʻz`+'+\$z`'\$\$z`*&+\$z`*&, \$z`*&, , z`+'-\$z`*)\$\$g`]XYz`*)\$\$WUgg]Wz`+-\$\$df]ga z`+)\$\$z`+%&\$Wz`+'%\$gi dYfbcj Uz`+)%\$gz`+*%\$gz

) &\$\$LA z`)' \$\$LA z`)' %\$LA z`) % \$z`&+\$\$Wz`**\$\$g`]XYz̄'' *%\$Uz̄'' *%\$Zc`Xz̄'*))) z̄'*\$,) z̄'*\$, *z̄'*%&) z̄'&*-\$z̄'&+%\$bUj]z̄'*% %z̄'*%' z̄'' %\$-z̄'' %%\$Vz̄'' &&\$Vz̄'') \$\$z̄'' *\$\$z̄'' +&\$WUgg]Wz̄') &&\$LA z̄') *%\$LA z̄'*%) %z̄'*&*+z̄'*' \$' z̄'*' \$']z̄'*' \$\$]z̄'**\$\$zc`Xz̄' +&%\$gz̄', *\$\$`i bUz̄', , \$\$UfhYz`L' z̄'L &z̄'*+\$\$Wz̄'+\$&\$"""

FYdU]f'!'7U`YbXUfž'D\cbY6cc_"

5```FA!acX]Z]WUh]cbg'cZ'h\YgY'acXY`g'UfY'giddcfhYX'hcc"

G* \$ '5D9. '5@@'A C 8 9@G

' \$ \check{z} ', \$ \check{z} '**, \$ \check{z} 'B+\$ \check{z} 'B+\$ \check{z} 'B+\$ \check{z} 'B+\$ \check{z} 'B+\$ \check{z} 'B+\$ \check{z} 'B-\$ \check{z}

FYdU]f! 7U`YbXUfž'D\cbY6cc_"

5``FA!acX]Z]WUh]cbg'cZ'h\YgY'acXY`g'UfY'gi ddcfhYX'hcc"

G* \$.

 $\mathsf{GA}\,\mathsf{G}\check{\mathsf{z}}^{\mathsf{T}};\,\,\mathsf{U}^{\mathsf{T}}\mathsf{Y}\mathsf{f}\mathsf{m}\check{\mathsf{z}}^{\mathsf{T}}\mathsf{D}\mathsf{U}\mathsf{g}\mathsf{g}\mathsf{k}\,\,\mathsf{c}\mathsf{f}\mathsf{X}\mathsf{g}\check{\mathsf{z}}^{\mathsf{T}}\mathsf{D}\mathsf{V}\mathsf{c}\mathsf{b}\mathsf{Y}\mathsf{6}\mathsf{c}\mathsf{c}_{-}\check{\mathsf{z}}^{\mathsf{T}}\mathsf{7}\,\mathsf{U}^{\mathsf{T}}\mathsf{b}\mathsf{X}\mathsf{U}\mathsf{f}^{\mathsf{T}}\mathsf{6}\mathsf{U}\underline{\mathsf{W}}\mathsf{i}\,\,\mathsf{d}.$

 $B + ^*\check{z} B, \mathscr{Z}), \$ \$\check{z})) \$ \$\check{z}' \&) \$ \check{z}) + \$ \$\check{z}) + \mathscr{\$}\check{z}' 9^* \check{z}' 9) \$\check{z}' 9) \mathscr{Z}' * \% \$b\check{z}' * \&\$ WUgg] W' * \&\& W' * * \& (W' * *) \$\check{z}' 9 + \mathscr{Z}' 9 + \mathscr$

5``FA!acX]Z]WUh]cbg'cZ'h\YgY'acXY`g'UfY'gi ddcfhYX'hcc"

G* \$.

; U``YfmVUWi d'cb`m

 $B+,\ \check{z}^{\cdot}B+-\ \check{z}^{\cdot}B,\ \ \check{z}^{\cdot}B,\)\ \check{z}^{\cdot}L^{*}\check{z}^{\cdot})\ ,\ \ \$\check{z}^{\cdot}))\ '\ \ \$\check{z}^{\cdot}B-+\check{z}^{\cdot}B-+A\]b]\check{z}^{\cdot}B-+]\check{z}^{\cdot})\ \&'\ \ \$\check{z}^{\cdot})+\%\$\check{z}^{\cdot}9)\ \&\check{z}^{\cdot}9^{*}*\check{z}^{\cdot}9+)\ \check{z}^{*}*\&\&\$W\check{z}^{\cdot})'\ '\ \$HJ\ \check{z}^{\cdot})+'\ \$LA\ \check{z}^{*}**)\ \$\check{z}^{\cdot}9+\%I'''''$

 $5 ```FA!a~cX]Z]WUh]cbg'cZ'h\ YgY'a~cXY`g'UfY'gi~ddcfhYX'hcc"$

GWfYYbg\chg

GYh']bWi XYg. ! '66) '9Ugm'GYfj]WY'Hcc`'Xcb[`Y



SUPPORT

`=a dcfhUbh``]b_g

!`\hhd.##XV"]bZ]b]hmtVYgh"Wta., \$\$%#ghUhi g"d\d`9gh]a UhYX`h]a Y`Zcf`i b`cW_`WtXY`WU`W``Uh]cb!`\hhd.##k k k "]bZ]b]hmtVYgh"Wta #Xck b`cUX#]bXYI!%"d\d3X]f1 gcZhk UfY# GcZhk UfY`i dXUhYg

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