

9]b '6`]W_ 'Ui Z'6]b U b W Y ž'C _ l ž'7 f m d h c "Wca ž 6]h Z]b Y l 'i b X '< i c V] '

BUWX XYa Ni gUa a YbVfi WX j cb : HL j YfUb`UgghY XYf'J cfZU`` j]Y`Y`[fc»Y`?fmdhc!6`OfgYbž`FYgYfjYbUWkY]gY`ibX`@]ghYb VY_UbbhYf^5XfYqqYb^ni~j~YfÒZZYbh`]WXYbž'XUa~]h^6Ybi~hnYf^X]Y NU' = b[gZA'][Y]hXYf' < UbXYgd'UhhZcfa Yb'ØVYfdfØZYb_ÒbbYb""K À\fYbX"X]Y"F]WXh][_Y]h"X]YgYf FYgYfj YbUWk Y]g`]ghYb i bX 5ggYh!8Ug\VcUfXg i a ghf]hhYb]ghž·[YVYb·g]Y·Y]bYb·9]bV`]W·]b·X]Y·[fc»Yb·Gi a a Yb·Ub ? fmd hc k $\lambda \in \mathbb{Z}[X]Y \in \mathbb{C}[fc Y b 6 \partial fq Y b Y fk U fh k Y fX Y b]$ Ni a $\frac{6}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ [f \grave{O} » hY '? fmd hc k \grave{A} \fi b [gV \grave{O} fgY \check{z} '? fmd hc!5ggYhg']b' < \grave{O} \Y'| cb * * `A]``]UfXYb`I G!8c``Ufž'k Ug'a Y\f'U`g'* I 'XYg'[YgUa hYb BYhhok Yfhg'XYf'?fmdhck À\fi b[gk]fhgWXUZh'jcb'%'6]``]cb'l G! 8c``Uf'Ui ga UW\h"'9]bY' ≠0gdY_h]cb'j cb') 'DfccZcZFYgYfj Y! @ $[ghYbžX]Y^9]bV^]W_]b^[fc_Y^?fmdhck_A^fib[gVYghAbXY]$ $[YVYbGY]hXYaG]bXaY\fUg, $HU[Y]Yf[Ub[Yb]$ / Ua d∧Y``]d/

BUW. XYa Ni gUa a YbVfi W. j cb: HL j YfUb`UgghY XYf

J cfZU``j]Y`Y'[fc» Y'?fmd hc!6 OfgY b ž F YgYfj YbUW. k Y]gY'i b X
@]ghYb 'VY_UbbhYf 5 XfYggYb ni j YfOZZYbh`]W. Yb ž XUa]h
6Ybi hnYf X]Y`NU\`i b[gZÀ\][_Y]h`XYf' < UbXY`gd`UhhZcfa Yb

ØVYfdfØZYb _ObbYb" K À\fYbX X]Y`F]W. h][_Y]h`X]YgYf

F YgYfj YbUW. k Y]g`]ghYb i b X 5 ggYh!8 Ug\VcUfXg`i a ghf]hhYb
]ghž [YVYb 'g]Y 'Y]bYb '9]bV`]W_ ']b 'X]Y [fc» Yb 'Gi a a Yb 'Ub
?fmd hck À\fi b[ž X]Y'j cb [fc» Yb '6 OfgYb'j Yfk U\fh'k YfXYb"
Ni a '6Y]gd]Y``j Yfk U`hYh'6]bUbWYž X]Y bUW.

<UbXY`gj c`i a Yb [fO`»hY'?fmd hck À\fi b[gVOfgYž'?fmd hc!
5 ggYhg']b '< O\Y'j cb'** 'A]``]UfXYb'I G!8 c``Ufž'k Ug'a Y\f'U`g
* I 'XYg'[YgUa hYb'BYhhck Yfhg'XYf
?fmd hck À\fi b[gk]fhgW. UZh'j cb'%'6]``]cb'I G!8 c``Uf
Ui ga UW. h"

9]bY'=bgdY_h]cb'jcb') 'DfccZ!cZ!FYgYfjY! @]ghYbž'X]Y'9]bV`]W_']b'[fc»Y ?fmdhck À\fib[gVYghÀbXY'[YVYb

GY]hXYa 'g]bX'a Y\f'U`g', \$'HU[Y'jYf[Ub[Yb'7c]bXYg_
j YfOZZYbh`]W\h'U'; YgW\]W\hY'ØVYf'X]Y'6]`Ubn'j cb'5`Ua YXU
FYgYUfW\ž'X]Y'nY][hYž'XUgg'XUg'ei Ubh]hUh]j Y'HfUX]b['8Yg_'Y]bYb
[fc*Yb'HY]`'XUj cb'VYgU*'Zhl!Hc_Yb'ft HHŁ"'8Ubbž'Ua '*"
Bcj Ya VYf'&\$&&ž'6]bUbW'79C'7\Ub[dYb['N\Uc'ff'NŁ'
Ui Z[YXYW_h'XUgg'gY]bY'6ÒfgY']\fY': HH!6YghÀbXY'j Yf_Ui ZYb
k ØfXY"'GY]hXYa '\Uh': HH'Yf\YV']W\'Ub'K Yfh'j Yf`cfYb'i bX': HL'
UV[Y`Y[h'ZØf'\Dgc`j YbngWi hn'ZØbZ'HU[Y'gdÀhYfž'Ua''%"
Bcj Ya VYf"'Ni 'X]YgYf'NY]h'i bX'j cf'XYa 'Ni gUa a YbVfi W\'j cb
: HL'k Uf'Yg'Y]bY'< YfUi gZcfXYfi b[\ž'X]Y'FYgYfj Yb'XYf'6ÒfgY'ni
ØVYfk UW\Yb\z'XU'X]Y': Ø\fi b[g_fÀZhY'X]Y'8]b[Y'gY\f
i bXi fW\g]W\h]['\]Y'hYb"'8]YgY'G]hi Uh]cb'\Uh'X]Y'6ÒfgYb'XUni
j YfUb`Ugghz'DfccZlcZlFYgYfj Y!@ghYb'\YfUi gni [YVYb\z'i bX'XUg'\Uh
Yg'Ui W\'[Y[YVYb'?f]h]_'Ui g'XYf'?fmdhc]bXi ghf]Y'A]h[`]YXYf

8 UfØVYf`\]bUi g`_Øfn`]W\`DUi ``A i bhYfž'Ua h]YfYbXYf

< Ui dhVi W\\U`hYf`XYf`I G!6ÒfgYbUi Zg]W\hgVY\ÒfXY`G97`

Ub[Y[YVYb`XUgg`X]Y`G97`DfccZlcZlfYgYfj Yg`fDCFŁ`[YbUi

ØVYfk UW\h"'Hfchn`XYf`6YgW\kYfXYb`[YVYb`X]Y`j YfZØ[VUfYb`DfccZlcZlfYgYfj Y!@]ghYb`Y]bYb`[Yk]ggYb`9]bV`]W_`]b`X]Y`6YghÀbXY`j cb

I bhYfbY\a Yb`i bX`hfU[Yb`V]g`ni Y]bYa `[Yk]ggYb`; fUX`ni f

J YfVYggYfi b[`XYf`A Uf_hghUV]`]hÀhVY]ž`XU`X]Y`6YghÀbXY`ØVYfk UW\h
k YfXYb`_ÒbbYb"'8 Ug`: c`[YbXY`]ghY]bY`I bhYfgi W\i b[`j cb`ZØbZ
j YfgW\]YXYbYb`nYbhfU`]g]YfhYb`?fmdhc!5ggYhl6ÒfgYb`i bX`]\fYb
6YghÀbXYb`Ub`?fmdhc!5ggYhg`ni a `&&"`*Jbi Uf`&\$&'

5i ghUi gW\`]ghY`j cb`bUbgYb"U]"`BUbgYb`j YfZØ[h`ØVYf`Y]b
8 Ug\VcUfX`ZØf`%, `j YfgW\]YXYbY`nYbhfU`]g]YfhY`?fmdhc!
5i ghUi gW\d`UhhZcfa Yb"

6]bUbW

6]bUbWY]gh'X]Y [fÒ» hY a]h'* * 'A]``]UfXYb'8c``Uf']b'X][]hU`Yb

J Yfa Ò[Ybgk YfhYbž'X]Y j ca '?fmdhc!6ÒfgYb[][UbhYb']b'F YgYfj Y

[Y\U`hYb'k YfXYb"5a '&&"'*JUbi Uf'\]Y`h'X]Y'bUW\'<UbXY`gj c`i a Yb

[fÒ» hY'?fmdhc!6ÒfgY'(, * "(&+'6]hWc]b'fb]hWc]b'b']a 'K Yfh'j cb'*%%%%

A]``]UfXYb'I G!8c``Uf"'*±b'6Yni ['Ui Z'GhUV`YWc]bg'\A`h'6]bUbWY'%' ž&

A]``]UfXYb'I G!8c``Uf'Ub'HYh\Yf'fl G8HL'i bX'%' ž' 'A]``]UfXYb'I G!

8c``Uf']b'61 G8"

6]bUbWY!Hc_Yb!Ni k Y]gi b['Ua '&&"'*\Jbi Uf'&\$&' "'

8 UfØVYf`\]bUi g`\à`h'6]bUbW'(ž+'A]``]cbYb'9h\Yf']a 'K Yfh'j cb'+ž* A]``]UfXYb'I G!8c``Uf'i bX'k Y]hYfY'+ž*'A]``]UfXYb'I G!8c``Uf'Ub 6]bUbW'Wc]b'fbB6Ł"'8]Y'6ÒfgY'\à`h'Ui W\'UbXYfY'?fmdhc!5ggYhg]a 'K Yfh'j cb'a Y\f'U`g'%' 'A]``]UfXYb'8c``Ufž'X]Y'ni 'nU\`fY]W\'g]bXži a 'g]Y'ni 'bYbbYb"'K Ybb'XYf'J cffUh'j cb'6]bUbW']b'X]Y'Hcd!HYb!?fmdhc!5ggYhg'bUW\'A Uf_h_Ud]hU`]g]Yfi b['Ui Z[Ybca a Yb'k ØfXYžk ØfXY'Yf'Ui Z'XYa 'j]YfhYb'D`Uhn'fUb[]YfYb"

CI

 $B UbgYbg`8 Ug\VcUfX!@]ghY`nY][hž`XUgg`X]Y`?fmdhc!6OfgY`C_I``\A`h`+ž*`A]``]UfXYb`8c``Ufb`]b`?fmdhc!5ggYhg"''A]``]UfXYb`IG!8c``Ufb$

XYf'; Y`XYf'k YfXYb']b'HYh\Yf'[Y\U`hYb'f| G8 HŁž'i bX'X]Y'6ÒfgY \À`h'Ui WX'-+"*) * '6]hWc]b]a 'K Yfh'j cb'&ž&'A]``]UfXYb'l G!8c``Uf"

C_l !Hc_Yb!Ni hY]`i b['Ua '&&" '*Jbi Uf'&\$&' "'

? fmd hc "Wca

7fmdhc"Wca !Hc_Yb!Ni k Y]gi b['Ua '&&" '*\\bi Uf'&\\$&' "'

6]hZ]bYI

8]Y X][]hU`Y 8 Yj]gYb\UbXY`gd`UhhZcfa '6]hZ]bYl '\À`h', 'A]``]UfXYb
8c``Uf']b'?fmdhc!5ggYhg'Ua 'GcbbhU[ž'XYb'&&"'*Jbi Uf'&\$&' "') (ž&L XYf'6YghÀbXY'j cb'6]hZ]bYl 'g]bX']b'6]hWc]b'fb]hWc]b'cXYf'fi bX
%- %"*) ('6]hWc]b'zXUg'\Yi hY'(z' * 'A]``]UfXYb'l G!8c``Uf'k Yfh']gh"
&, ž%) 'L XYg'J Yfa Ò[Ybg'j cb'6]hZ]bYl 'k YfXYb']b'i b[Ybi hnhYb'@Yc!
Hc_Yb'fl@9C'cXYf'@9C']a 'K Yfh'j cb'fi bX'&z&'A]``]UfXYb'l G!8c``Uf
[Y\U`hYb"

8]Y'6ÒfgY'\À`h'Ui W\'(**"\$%('9h\YfYi a 'fPH< ŁZ']a 'K Yfh'j cb'+)*
A]``]cbYb'l G!8c``Ufz'Ua '&&"'\Jbi Uf"'8UfØVYf'\]bUi g'j Yfk U`hYh
6]hZ]bYl''' %'A]``]cbYb'HYh\Yf'fl G8HŁ'i bX'\\$z*('i 'XYg
JYfa Ò[Ybg'j cb'6]hZ]bYl'cXYf'fi bX'\%*'A]``]cbYb'LFDk YfXYb']b
FØW_`U[Yb'[Y\U`hYb"

<icV]

<i cV]'\A`h'\Yfi a '' ž%+ 'A]``]UfXYb '8 c``Uf'Ua '&&"'\Jbi Ufž'i bX
' \$ž- %'ı 'XYf'J Yfa Ò[Ybgk YfhY'VYZ]bXYb'g]W\'Ub'XYf'6ÒfgY'Wc]bž
<i cV]!Hc_Yb'fk HŁ"'8]Y'6ÒfgY'j Yfk U`hYh'%- * 'A]``]cbYb'< Hž'k Ug
\Yi hY'Yhk U'-, \$'A]``]cbYb'l G!8 c``Uf'k Yfh']gh"</pre>

<i cV]!Hc_Yb!Ni k Y]gi b['Ua '&&"'\lambda bi Uf'\&\\$\' "'8 Ug
6\OfgYbdcfh\overline{Tc}\]c']gh'Ui \overline{Z'[Y_YbbnY]\W\bYh'5i ghUi g\W\\]ghY'j cb
b\UbgYb\"U]\"'</pre>

<i cV] `\ À`h'Ui W\ '* %+ 'A]``]cbYb'HYh\Yf'fl G8 HŁ'i bX'- 'A]``]cbYb
hfcb'fHF L Łž']a 'K Yfh'j cb') - * 'A]``]cbYb'l G!8c``Uf"''%&ž%' 'i 'XYg
JYfa Ò[Ybg'j cb'<i cV]'k YfXYb'[Y\U`hYb'6]hWc]b) ž') 'i 'k YfXYb
[YgdY]W\Yfh'9H< ž'i bX'%' ž') 'i 'XYf'JYfa Ò[Ybgk YfhY'j cb'<i cV]
g]bX'U`hYfbUh]j Y'?fmdhc!JYfa Ò[Ybgk YfhYž'X]Y'ni 'nU\`fY]W\ 'g]bXž
i a 'g]Y'ni 'bYbbYb"'8Yf'K Yfh'j cb'+ž+'A]``]cbYb'l G!8c``Uf'ghUa a h
j cb'XYb') +ž), 'A]``]cbYb'<l G8ž'X]Y'<i cV]'\À`hž'k Ug'' \$ž**'i 'XYg
<l G8!5b[YVchg'Ybhgdf]W\h''K À\fYbX'<l G8'Y]bgh'Y]b'Ub'XYb'l G!
8c``Uf'[YVi bXYbYf'GhUV`YWc]b'k Ufž'k]fX'<l G8'Yhnh'ZØf'\$ž%''`
dfc'GhØW_'[Y\UbXY`h'Wc]b''</pre>

8]Y')'6ÒfgYb'\U`hYb',, ž*'A]``]UfXYb'8c``UfcXYf', ž*'ı 'XYg'U_hi Y``Yb'l G8!K Yfhg'XYf7fmdhc'9Wcbca m

5``Y'ZØbZ'XYf'cVYb'[YbUbbhYb'?fmdhck À\fi b[gVÒfgYb'\U`hYbni gUa a Yb', , ž*'A]``]UfXYb'l G!8c``Uf'Ub'?fmdhc!

JYfa Ò[Ybgk YfhYb"'8Yf'_ca V]b]YfhY'K Yfh'U``Yf'ZØbZ'FYgYfj Yb'XYf 6ÒfgY'Ybhgdf]W\h', ž*'ı 'XYf'U_hi Y``Yb'?fmdhc!K]fhgW\UZh'j cb'% 6]``]cb'l G!8c``Uf"

 $+(\ \check{z}(\ -\ '\ '\ 'XYf',\ ,\ \check{z}^*\ 'A\]``]UfXYb'' G!8c``Uf''k\ YfXYb''Ui\ Z'6]bUbW'' [\ Y\setminus U`hYb\check{z}'i\ bX'XYf'FYgh'j\ YfhY]`h'g]W''Ui\ Z'C_I\ \check{z}'7fmdhc''Wca\ \check{z}$ $6]hZ]bYI''i\ bX'< i\ cV]'''8]Y'< UbXY`gd`UhhZcfa''a\]h'XYb''[fÒ>hYb'' 6)fgYb'hc_Yb'']gh'6]hZ]bYI''a\]h'Y]bYa''JcffUh'Ub''@9C'']a''K\ Yfh'j cb & \check{z}&''A\]```]UfXYb''I\ G!8c``Uf'''Jcb''XYb''ZØbZ'[YbUbbhYb''6)fgYb'\A`h 6]bUbW''X]Y''a\ Y]ghYb''6]hWc']b'fb']hWc']b''a\]h'gY]bYa'''7UWXY''j cb (, *''(&+'6]hWc']b'''$

.

>Ja]Y FYXa Ub

.

.

6]`XbUW k Y]g. `G\i hhYfghcW_ž`D]I UVUmž`K]_]`7ca a cbgž 5i ghUi gW\`]ghY`j cb`bUbgYb"U]ž`

 $6Y^{T}YVhYfY^{T}BUWXf]WXhYb$

: U``g'8i 'Yg'j YfdUggh'\Ugh

.

fZ bWh]cbfXžgž]XŁoj Uf~gžZg·1 X"[Yh9`Ya Ybhg6mHU[BUa YfgŁO\$Q']ZfK"[Yh9`Ya Ybh6m=Xf]XŁŁfYhi fb/g·1 X"WfYUhY9`Ya YbhfgŁ/g"]X·1]X/g"gfW1 ~\hhdg.##WcbbYWh"ZUWYVcc_"bYh#YbSl G#gX_"g, I ZVa `1 %/j Yfg]cb1j' "&~/Zg"dUfYbhBcXY"]bgYfh6YZcfYf/gžZgŁ/qfXcWa YbhžfgWf]dhfzfZUWYVcc_!ggX_fŁŁ/

8 YhU]`q

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. '_fmd hc!bYk g"Uh