

LING5022

7 fcgg! W'h fu`Dfu[a Uh]Wg

HYfa 'C bY''##'&\$&%

7ci fgY⁻Cj Yfj]Yk

GHJZ7cbHJWh8YHJ]`g

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`] m	@cWUh]cb	D\cbY
8YVfU [*] 5Ufcbg		H\ifgXUm %"\$\$!&"'\$DA'cf'Vm Uddc]bhaYbh		i gY Ya U]` d`YUgY

GWXcc`7cbHJWhi±bZcfa Uh]cb

GW.cc``cZ<iaUb]h]Yg'UbX'@Ub[iU[Yg

@cWUhjcb. GWkcc CZJWY ZA cfj Yb 6fck b 6i] X]b[z @Yj Y 8 & Z &),

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D\cbY. 'Ž*%'&'-',)'%*,%

: UI . Ž*%'&'-' ,) ', +\$)

9a U]`. '\U`4 i bgk "YXi "Ui_

7ci fgY 8YHJ] g

7 fYX]hDc]bhg**

Gi a a UfmcZh\Y 7ci fgY

H\]g`Wci fgY`YI Ua]bYg`f\Y`fc`Y`cZ`Ub[i U[Y`]b`gcW]U`ž]bgh]h h]cbU`ž'UbX`Wi`h fU``WcbfYI hgžYgdYV]U``mf\Y dfU[a Uh]Wgci fWg`cZ`Ub[i U[Y`VfYU_Xck bg`UbX`Wca a i b]WUh]j Y`a]g!YbWci bhYfg`Vm]XYbh]Zm]b[`UbX XYgWf]V]b[`a U'cf`ZJWcfg`]b`Wca a i b]WUh]j Y`Yj Ybhg''`Mci `k]``YI d`cfY`cZU'fUb[Y`cZWJgY`ghi X]Yg h\Uh]`i ghfUhY`X]ZZYfYbhgci fWg`cZa]gWca a i b]WUh]cb`UbX``YUfb'j Uf]ci g`k Umg`cZUbU`mg]b[`h\Y fY`Uh]cbg\]d`VYhk YYb``Ub[i U[Y`UbX`W`hi fY''Mci `k]``VYWca Y`ZJa]`]Uf`k]h\`U`i gYZ ``gYhcZfYgci fWg`hc Udd`m]b`X]ZZYfYbhdfcZYqq]cbU``UbX`UWJXYa]WWcbhYl hq''

7 ci fgY @YUfb]b[Ci hWca Yg

- %" 5dd`mh\YcfYh]WU``UddfcUW\Yg`]b'h\Y`Z]Y`X`cZWfcgg!W`hifU``UbX`]bhYfW`hifU``dfU[aUh]Wg`hc'h\Y UbU`mg]g`cZX]ZYfYbhWaaib]WUh]cb`gWYbUf]cg"
- &" 7 f]h]WU``miYj U`i UhY`h\Y``]hYfUhi fY`cb`dfcV`Ya g`]b`Wca a i b]WUh]cb`g]hi Uh]cbg'h\Uhi]bj c`j Y`dYcd`Y`Zfca X]ZZYfYbh`Ub[i U[Y`UbX#cf`W`hi fU``[fci dg"
- ("5bU`mgY``]b[i]gh]WXUhU`UbX`Uf[iY`h\Y`aYf]hg`cZh\Y`UbU`mg]g"

HYUWX]b['GhfUhY[]Yq'

H\Y`fUh]cbU`Y`Zcf`@B; `) \$&&`]g`hc`dfcj]XY`ghi XYbhg`k]h\`U`[fci bX]b[`]b`h\Y`ghi XmcZ`]b[i]gh]W Wca a i b]WUh]cb`Ua cb[`dYcd`Y`cZX]ZYfYbh`Ub[i U[Yg`UbX`W`hi fYg`h\Uhik]```YbUV`Y`h\Ya `hc`hYUW\`cf`k cf_ k]h\`X]j YfqY`W`hi fU``UbX``Ub[i U[Y`[fci dqž`]b`5i qhfU`]U`UbX`UVfcUX"

H\Y`k\YY_`m`YWi fYg`UfY`X]j]XYX`]bhc`tk\c`dUffg"`\D`th\Y`Z]fghidUffž`VUg]WWcbW'dhg`UbX`th\YcfYh]WU``]ggi Yg`UfY\dfYgYbhYX"\D`th\Y`gYWcbX`dUffž`j Uf]ci g`dfcV`Ya g`UbX`XUhU`gYhg`UfY`dfYgYbhYX`UbX`X]gW ggYX`]b`Ub\]bhYfUWf] Y`a UbbYf`UbX`mci `UfY`YbWci fU[\YX`hc`Wcblf]Vi hY`hc`th\Y`X]qW\qq]cb"

 $H\Y''hi\ hcf]U'g'dfcj\]XY'mci\ 'k\]h\ 'h\Y'cddcfhi\ b]lm'Zcf'Ub']b!XYdh\ 'YI\ Ua\]bUh]cb'cZ`]b[i\]gh]WXUhU'fXfUk\ b'Zfca\ 'Uk]XY'fUb[Y'cZ`Ub[i\ U[YgŁž'k\]h\ 'dUff]W' `Uf'ZcW' g'cb'WfYUh]j Y'dfcV'Ya\ !gc'j\]b[i\ g_]``g']b'U'Wc``UVcfUh]j Y Ybj]fcba Ybh'$

Uddfcl]a UhY`m'

5XX]h]cbU`XYhJ]`g.

H\Y`UggYgga YbhitUg_`k]```VY`a UXY`Uj U]`UV`Y`bc``Ygg`t\Ub`tkc`kYY_g`Zfca`]\g`gi Va]gg]cb`XUhY"

Gi Va]gg]cb bchYg. hc VY gi Va]hhYX cb A ccXY

Hi fb]hjb gYhjb[. H\]g]g bchU Hi fb]hjb Ugg][ba Ybh

5ggYgga Ybh' . DfYdUfUhlcb Yl YfWlgYg

GHJfhXUhY. &&#\$&#&\$&%

@Yb[h\.'%%'g\cfh'Ubgk Yf'ei Ygh]cbg'cb!']bY/' '\ca Yk cf_Yl YfV][gYg'hc'VY'Ugg][bYX'k YY_m'

8 YW] g.

Gi Va]hhYX k YY_mcb`]bY/a Uf_YX Ui hca UhJWU`m]b h\Y WUgY cZei]nnYg"

%% g\cfh'Ubgk Yf ei Yghcbg

; YbYfU`kf]hhYb'ZYYXVUW_'dfcj]XYX'hc'h\Y'k\c`Y'WUgg"

5XX]h]cbU`XYhJ]`g.

Ei]n'hc'VY'hU_Yb'cb!`]bY

91 YfW]gYg hc VY gi Va]hhYX cb A ccX`Y

 $\begin{tabular}{ll} \textbf{Gi Va } \begin{tabular}{ll} \textbf{Gi Va } \be$

Hi fb]hb gYhb[. H\]g]g bchU Hi fb]hb Ugg][ba Ybh

5ggYgga Ybh(. DfcV`Ya GYh

GHJfhXUhY. "Uh`YUgh&k YY_g VYZcfY Xi Y XUhY

@Yb[h\. % \$\$ k cfXg Uddfcl]a UhY m

8 YW] g.

 $K f] h Y b ' d f c V ' Y a ' g Y h g \check{z} ` c b [' U b X ' g \ c f h' Z c f a ' U b g k Y f g '' ` A U f _ Y X ' U W k' f X] b [' h c ' g d Y W J Z Y X V U W _ '' ` % $$ ' k c f X g '' k c f X g$

H\]g`]g`h\Y`Z]bU``UggYgga YbhZcf`UlmYbXUbWY`di fdcgYg"

5XX]h]cbU`XYhU]`g.

5 bgk Yfg 'hc 'VY 'gi Va]hhYX 'cb 'A ccX`Y"

 $\label{eq:higher_high_problem} \mbox{Hi fb]h]b "gYhh]b[. "H\]g"]g"bch"U"Hi fb]h]b"Ugg][\mbox{ba Ybh}$

5 hhyb XUb WY F Yei]fYa Ybhg

5 hh/b Xub W/ 'Uhih hcf]u`g`]g`a Ub Xuhcfm]b`h\]g`Wci fgY"'I bYI W/gYX`UVgYb W/ Zfca 'a cfY`h\Ub`&\$I `cZhi hcf]u`g k]```fYgi `h`]b`h\Y`Uk UfX`cZU`ZU]``[fUXY"'\doth\``YWhi fYg`UbX`hi hcf]u`g`mci `k]```UWhj Y`mYb[U[Y`k]h\`WcfY Wci fgY`WcbhYbhz`YbUV`]b['mci `hc`UhhU]b`7 ci fgY`@YUfb]b['ci hWca Yg`%UbX`("'5 hh/bXUbW/"Uhihi hcf]u`g`k]```VY fYWcfXYX`h\fci [\`gi Va]gg]cb`cZk YY_`mei]n`]hYa g`5B8`h\Y`gi Va]gg]cb`cZk YY_`mYI YfW]gYgz`Ug`k Y```Ug`U ghi XYbhfg\dfYgYbW/"]b`h\Y`cb`]bY`hi hcf]U`"

7 ci fgY GWX YXi `Y

J]Yk 'WUgg'h]a YhUV'Y

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		cZDfU[a Uh]Wg^%(.^%-'!&% "
		("'6`i a !?i`_Už'G"'%, +"'=bX]fYWbYgg'UbX'dc`]hYbYgg]b`fYei Yghg. 'GUa Y''cf'X]ZYfYbh3'>ci fbU`'cZ DfU[a Uh]Wgž'%&'&''%' % %(*"
		F YWca a YbXYX
		6fck bž'D"ž/ 'G"'@Yj]bgcb"'%, +"'Dc`]hYbYgg. 'Gca Y i b]j YfgU`g']b``Ub[i U[Y'i gU[Y"'7 Ua Vf]X[Y. 7 Ua Vf]X[Y'I b]j Yfg]hmDfYgg":]fghdi V`]g\YX'% +, Ug`dUfhcZ9gh\Yf`B"'; ccXmfYX"Ł 'CgWef[a` e S` V Ba {fW Wee"
	Hi hcf]U`	: UV\.'@ b[i]gh]\WDc`]h\rb\gg'=
		FYUX]b['UbX'DfYgYbrUh]cbg
		DfYgWf]VYX
		%" `GdYbV\\f!CUh\mž`7\Udh\f`%/ `&
		&"'6ck Yž'A Ufhjb'/ 'A Ubbgž'7\UdhYf''
		' "`? UgdYfž'; "`% - \$"`@b[i]gh]WDc`]hYbYgg"`>cifbU`` cZDfU[aUh]Wg`%(.`%-'!&% "
		("'6`i a !?i`_Už'G"'%, +"'=bX]fYWbYgg'UbX'dc`]hYbYgg]b`fYei Yghg.'GUa Y''cf'X]ZYfYbh3'>ci fbU`'cZ DfU[a Uh]Wgž'%ž'&.'% %l%(*"
		FYWca a YbXYX
		6fck bžD"ž/ 'G"'@Yj]bgcb"'%, +"'Dc`]hYbYgg.'Gca Y i b]j YfgU'g']b'`Ub[i U[Y'i gU[Y"'7 Ua Vf]X[Y. 7 Ua Vf]X[Y'I b]j Yfg]hmDfYgg"':]fghdi V`]g\YX'%+, Ug'dUfhcZ9gh\Yf'B"'; ccXmfYX"Ł'E i Ygh]cbg'UbX Dc`]hYbYgg"
K YY_'(.', 'A UfVX'!'%& A UfVX	@YWh fY	: UWY.`@]b[i]gh]WDc`]hYbYgg'=
		F YUX]b[
		DfYgWf]VYX
		%" 'GdYbVWf!CUhYmž'7\UdhYf'%/ '&
		&"'6ck Yž'A Ufh]b'/ 'A Ubbgž'7\UdhYf''
I	1	1

		' "'?UgdYfž'; "'%-\$"'@ b[i]gh]WDc`]hYbYgg"'>cifbU`' cZDfU[aUh]Wg'%(.'%'!&%"
		("'6'i a !?i`_Už'G"'%, +"'+bX]fYWbYgg'UbX'dc`]hYbYgg]b'fYei Yghg.'GUa Y''cf'X]ZZYfYbh3'>ci fbU''cZ DfU[a Uh]Wgž'%&'&''% %1%(*"
		F YWca a YbXYX
		6fck bž'D"ž/ 'G"'@Yj]bgcb"'%, +"'Dc`]hYbYgg. 'Gca Y i b]j YfgU`g']b``Ub[i U[Y'i gU[Y"'7 Ua Vf]X[Y. 7 Ua Vf]X[Y'I b]j Yfg]hmDfYgg":]fghdi V`]g\YX'% +, Ug'dUfhcZ9gh\Yf'B"; ccXmfYX"Ł 'CgWef[a` e S` V Ba'[fW Wee"
	Hi hcf]U`	: UWY. '@ b[i]gh]WDc`]hYbYgg'=
		DfYgW f]VYX
		%"·GdYbWff!CUhYmž7\UdhYf`%/ `&
		&"'6ck Yž'A Uffjb'/ 'A Ubbgž'7\UdhYf''
		' "'?UgdYfž'; "'%-\$"'@]b[i]gh]WDc`]hYbYgg"'>cifbU`' cZDfU[aUh]Wg'%(.'%'!&%"
		("'6`i a !?i`_Už'G"'%, +"'±\X]fYWhbYgg'UbX'dc`]hYbYgg]b'fYei Yghg.'GUa Y''cf'X]ZYfYbh3'>ci fbU`'cZ DfU[a Uh]Wgž%%ž'&.'%'%%(*"
		F YWca a YbXYX
		6fck bžD"ž/ 'G"'@Yj]bgcb"'%, +"'Dc`]hYbYgg. 'Gca Y i b]j YfgU`g`]b``Ub[i U[Y`i gU[Y"'7 Ua Vf]X[Y. 7 Ua Vf]X[Y`I b]j Yfg]hmDfYgg":]fghdi V`]g\YX'% +, Ug`dUfhcZ9gh\Yf`B"; ccXmfYX"Ł`E i Yghcbg`UbX Dc`]hYbYgg"
K YY_').'%)'A UfWX'!'%- A UfWX	@YWhifY	F UddcfhUbX F UddcfhA UbU[Ya Ybh
, OIW		F YUX]b[
		GdYbWf!CUhYmž:7\UdhYf:%/ :&
	Hi hcf]U`	Hi hcf]U`
		: UWY.^@]b[i]gh]WDc^]hYbYgg^=
		F YUX]b[·
I	I	

		DfYgWf]VYX
		%" 'GdYbWf!CUhYmž'7\UdhYf'%'/ '&
		&"'6ck YžA Ufh]b'/ 'A Ubbgž7\UdhYf''
		' "'? UgdYfž'; "'% - \$"'@]b[i]gh]WDc`]hYbYgg"'>cifbU`' cZDfU[aUh]Wg'%(.'%'!&%"
		("'6'i a !?'i `_Už'G"'%, +"'±x]fYWbYgg'UbX'dc`]hYbYgg]b'fYei Yghg.'GUa Y''cf'X]ZYfYbh3'>ci fbU`'cZ DfU[a Uh]Wgž%%ž&.'% %l%(*"
		F YWca a YbXYX
		6fck bž'D"ž/ 'G"'@Yj]bgcb"'%, +"'Dc`]hYbYgg. 'Gca Y i b]j YfgU`g']b``Ub[i U[Y'i gU[Y"'7 Ua Vf]X[Y. 7 Ua Vf]X[Y'I b]j Yfg]hmDfYgg"':]fghdi V`]g\YX'% +, Ug'dUfhcZ9gh\Yf'B"'; ccXmfYX"Ł'E i Ygh]cbg'UbX Dc`]hYbYgg"
K YY_'*.'&&'A UfW\'!'&*	FYUX]b[H\]g`]g`U`fYUX]b[`k\YY_ž'bc``Y\\fi\fYg`]b`K\YY_`*`
A UfVX		FYj]g]cb'cZWcbhYbh'U`fYUXm'WcjYfYX`]b'KYY_g'%l)
	Hi hcf]U`	H\YfY`]g`bc`h hcf]U``]b`k YY_`*
K YY_`+.`&- `A UfW\`!`& 5df]`	@YWhifY	I bXYfgHJbX]b[g'cZ"W\hifY"
		DfYgWf]VYX F YUX]b[···
		GdYbWYf!CUhYmž ⁻ 7\UdhYf ⁻ ' "
		F YWca a YbXYX fYUX]b[
		%"' <c``]xumž'5"f"'&\$\$)"'h\y'ghfi[[`y'hc'hyuw\ 9b[`]g\'Ug'Ub'+bhYfbUh]cbU`'@Ub[iU[Y"'C ZcfX. C ZcfX'Ib]jYfg]hmDfYgg"'%+!&("''Wy'fdSUfeShS['ST'W'a` Ž'{`W'ad[</c``]xumž'5"f"'&\$\$)"'h\y'ghfi[[`y'hc'hyuw\
		<pre>< c``]XUmž'5"ž'A "'< mXYž''/'>"'?i``a Ub"' +bHYfW `hi fU` 7 ca a i b]WUh]cb"''5b'UXj UbWYX'fYgci fWY'Vcc_'Zcf ghi XYbtg"'fGYWcbX'YX]h]cbt"'@cbXcb'UbX'BYk' Mcf F ci hYX[Y"</pre>
		&"``?ia UfUj UX]j Y`i ž'6"`&\$\$, "`7i `hi fU``; `cVU`]gUh]cb]b`@Ub[i U[Y`9Xi WUh]cb"`MJ`Y.`MJ`Y`I b]j Yfg]hm DfYgg"`&%&!&%+"`Wj fdSUfe ShS['ST*Wa` Ž'{` Wlad[`
		<pre>< c``]XUmž5"žA "`< mXYž/ `>"`?i``a Ub"'=bHYfW `h fU` 7 ca a i b]WUh]cbž5b'UXj UbWYX'fYgci fWY'Vcc_'Zcf gh XYbhg"'fGYWcbX'YX]h]cbŁ"'@cbXcb'UbX'BYk 'Mcf</pre>

	Fci hYX[Y"
	' "``Gi[]achcžM''%-+"`5b`±bhfcXiWh]cb`hc`>UdUbYgY GcWjYhm'`7UaVf]X[Y.`7UaVf]X[Y`Ib]jYfg]hmDfYgg" %l(/%%l%''WjfdSUfeShS['STWa`Ž1\Wad[
	< c``]XUmž·5 "ž·A " ·< mXYž⁄ ·>" ? i ``a Ub" ·±bhYfW `hi fU` 7 ca a i b]\Wuhjcbž·5 b ·UXj Ub\WYX fYgci f\W ·Vcc'Zcf ghi XYbhg" fGYWcbX YX]hjcbŁ" @cbXcb ·UbX BYk ·Mcf F ci hYX[Y"
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		DfYgWf]VYX F YUX]b[···
		GdYbWf!CUhYmž'7\UdhYf'' "
		FYWca a YbXYX fYUX]b[
		%" < c``]XUmž'5"F "'&\$\$) "'H\Y'ghfi [[`Y'hc'hYUWX 9b[`]g\'Ug'Ub'±bhYfbUh]cbU``@Ub[i U[Y"'C ZcfX. C ZcfX' b]j Yfg]hmDfYgg"'%+!&("''Wj fc5Ufe ShS['ST'W a` Žf` W ad [`
		<pre>< c``]XUmž'5"ž'A "'< mXYž''/ '>"'?i``a Ub"'+bhYfW `hi fU` 7 ca a i b]WUh]cb"''5b'UXj UbWYX'fYgci fWY'Vcc_'Zcf ghi XYbhg"'fGYWcbX'YX]h]cbŁ"'@cbXcb'UbX'BYk 'Mcf F ci hYX[Y"</pre>
		&"``?ia UfUj UX]j Y`i ž'6"`&\$\$, "`7i `hi fU``; `cVU`]gUh]cb]b`@Ub[i U[Y`9Xi WUh]cb"`MJ`Y.`MJ`Y`I b]j Yfg]hm DfYgg"`&%&!&%+"`Wj fdSUfe ShS['ST*Wa` Žf` W ad[
		<pre>< c``]XUmž5"žA "'<mxyž '="">"?i``a Ub"'±bhYfW `hi fU` 7 ca a i b]WUh]cbž5b`UXj UbWYX`fYgci fWY`Vcc_`Zcf ghi XYbhg"`fGYWcbX`YX]h]cbŁ"'@cbXcb`UbX`BYk `Mcf F ci hYX[Y"</mxyž></pre>
		' "''Gi []a chcžM''% - +"'5b'+blfcXi Whcb'hc'>UdUbYgYGcWjYm''7Ua Vf]X[Y.'7Ua Vf]X[Y'I b]j Yfg]lmDfYgg"%(/%%%" WjfcSUfe ShS['ST'Wa`Žf; Wjad['
		<pre>< c``]XUmž'5"ž'A "'< mXYž/ '>"'? i ``a Ub"' =bHYfW `hi fU` 7 ca a i b]WUh]cbž'5b'UXj UbWYX'fYgci fWY'Vcc_'Zcf ghi XYbhg"'fGYWcbX'YX]h]cbŁ"'@cbXcb'UbX'BYk 'Mcf F ci hYX[Y"</pre>
K_YY_''\%'5df]`'!'\%* 5df]`	@YWhifY	
Surj		GdYYWX:5Wfg:5Wfcgg:7i `hi fYg
		FYUX]b[
		GdYbWff!CUhYmž·7\UdhYfg^('/ ')
		GdYbWrf!CUhYm7\UdhYfg*%\$%*/**
		6`i a !?i`_Už'G"'%, +"'+bX]fYWbYgg'UbX'dc`]hYbYgg']b fYei Yghg.'GUa Y''cf'X]ZYfYbh3'>ci fbU''cZ DfU[a Uh]Wgz'%%%&.'%' %!%(*"
		6`i a !? i `_Už'G"ž'UbX'C `g\rU]bž'9"ž'% , ("'F Yei Ygrg UbX'5dc`c[]Yg"'5dd`]YX'@b[i]gr]Wgž') ž' .'% *!&%
	Hi hcf]U`	

GdYYWX:5WMg:5Wfcgg:7i `hi fYg:
F YUX]b['UbX'DfYgYbfUf]cbg
GdYbWf!CUhYmž7\UdhYfg^('/')
GdYbWffCUHYm7\UdHYfg'%\$'/ '%%
6`i a !?i`_Už'G"'%, +"`±bX]fYWfbYgg'UbX'dc`]hYbYgg']b fYei Yghg. GUa Y 'cf'X]ZYfYbh3'>ci fbU`cZ DfU[a Uh]Wgž'%%ž&.'% %1%(*"
6`i a !?i`_UžG"ž'UbX'C`g\HJ]bž'9"ž%, ("'F Yei Yghg UbX'5dc`c[]Yg"'5dd`]YX'@ b[i]gh]Wgž') ž'.'% *!&%

	%": U]fWci [\'B"'%, -"'@Ub[i U[Y'UbX'Dck Yf" @cb[a Ub"
	&"`< U``ž`G"`&\$\$' "`Dck Yfž'? bck `YX[Y`UbX`8]gWci fgY" ♣0`8]gWci fgY`H\YcfmUbX`DfUWfJWY.`5`F YUXYf" K Yh\YfY``ž`A "ž`G"`HUmcf'/ G"`MUhYg`flYXg"Ł`7 U`]Zcfb]U. GU[Y"
	' "` <c`a ygž="">"'/ 'Ghi VVYžA "'&\$\$' "'Dck Yf'UbX</c`a>

FYgci fWyg

DfYgWf]VYX F Ygci fWYg

6ck Yž < "ž? "'A Ufhjb'/ '< "'A Ubbg" &\$%("'5a_ g` [USf[a` SUdaee 5g fgdWe" A Y`Vci fbY. '7 Ua Vf]X[Y I b]j Yfg]hmDfYgg" f $\&^{bX}$ YX]hjcbŁ"

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 $GdYbWf!CUhYm\ddot{z}<Y`Yb`fYXL''`&\$\$, "`5g'fgdS'^k EbWS] [`Y,5g'fgdWf5a_g` [USf[a`S`V Ba'[fW]Wee FZWadk\breve{z}, S'V Ba']fVVWee FZWadk\breve{z}, S'V Ba'[fW]Vee FZWadk$

FYWca a YbXYX FYgci fWYg

 $\label{eq:continuous} $$HY'fY'Y'' = Sf[Ue'UbX'h'Y'' = gd'S^aXBa'fW'WeeDWeWSdJZUbX; fWdJg'fgdS^BdSY_Sf[Ue'']$$$

 $5b`UXX]h]cbU```]ghcZdfYgWf]VYX`UbX`fYWcaaYbXYX`fYUX]b[g`k]```VY`dfcj]XYX`h\Uhk]```]bX]WUhY`kYY_`mfYUX]b[`fYei]fYaYbhg''$

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

7 ci fgYg'UfY'dYf]cX]\W\``mfYj]Yk YX'UbX'ghi XYbhg' ZYYXVU_`]g'i gYX'hc]a dfcj Y'h\Ya "'

: YYXVUW_]g`[Uh\YfYX`Zfca `gh XYbhg`i g]b[`a m9I dYf]YbW\"`±i]g`YbWci fU[YX`h\Uhgh XYbhg`Wca d`YhY`h\Y]f gi fj Ymg`VmUVW\gg]b[`h\Y`dYfgcbU`]gYX`k YV``]b_j]U`h\Y`A ccX`Y`Wci fgY`g]hY"

Gi Va]gg]cb cZ5ggYgga YbhHUg_g Hi fb]h]b Gi Va]gg]cb

-Zmci 'YbWci bhYf'U'dfcV`Ya 'k \Yb'UhhYa dh]b['hc'gi Va]hmci f'Ugg][ba Ybhh\fci [\'Hi fb]h]bž'd`YUgY hY`Yd\cbY'9I hYfbU``Gi ddcfhcb'-',)'''' %cf'Ya U]`'h\Ya 'cb'YI hYfbU`hY`hgi ddcfh4 i bgk "YXi "Ui '"'Gi ddcfh

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±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`hYl h'cf']XYU'k]h\ci h'UW_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'dfcYWhgž'Ug'k Y``'Ug dfYgYbhUh]cbg'k \YfY'gca YcbY'dfYgYbhg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci h'WfYX]h'

± Uddfcdf]UhY 'dUfUd\fUg]b[.'7\Ub[]b['U'ZYk'k cfXg'UbX'd\fUgYg'k\]'Y 'a cghmfYhU]b]b['h\Y'cf][]bU' ghfi WhifY'UbX#cf'dfc[fYgg]cb'cZ]XYUg'cZh\Y'cf][]bU'žUbX']bZcfa UhJcb'k]h\ci hUW_bck 'YX[Ya Ybh''H\]g'U'gc Udd']Yg']b'dfYgYbhUhJcbg'k\YfY'gca YcbY'dUfUd\fUgYg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci h'WfYX]hUbX'hc d]YW]b['hc[Yh\Yf'ei chYg'UbX'dUfUd\fUgYg']bhc'U'bYk'k\c'Yž'k]h\ci h'Uddfcdf]UhY'fYZYfYbW]b['"

7 c``i g]cb. 'k cf_]b['k]th 'cth\Yfg'Vi hdUgg]b['cZZth\Y'k cf_'Ug'U'dYfgcb'g']bX]j]Xi U``k cf_"'7 c``i g]cb'U`gc]bWi XYg'dfcj]X]b['mci f'k cf_'hc'Ubch\Yf'ghi XYbhVYZcfY'h\Y'Xi Y'XUhYžcf'Zcf'h\Y'di fdcgY'cZth\Ya d`U[]Uf]g]b['UhUbmh]a YždUm]b['Ubch\Yf'dYfgcb'hc'dYfZcfa 'Ub'UWUXYa]WhUg_žghYU`]b['cf'UWei]f]b[Ubch\Yf'dYfgcb'g'UWUXYa]Wk cf_'UbX'Wcdm]b[']hz'cZYf]b['hc'Wca d`YfY'Ubch\Yf'dYfgcb'g'k cf_'cf'gYY_]b[

- i bXYfglUbX`mci f`f][\hg`UbX`fYgdcbg]V]`]h]Yg`Ug`U`gh XYbh'Uhi BGK
- VY'Uk UfY'cZd`U[]Uf]ga ž'Wcdmf][\hzil BGK 'Gh XYbh7cXY'cZ7cbXi WhUbX'5WWdhUV`Y'I gY'cZ I BGK '= H'F Ygci fWfg'Dc`]Wh
- VY 'Uk UfY 'cZh\Y 'ghUbXUfXg 'cZVY\Uj]ci f'Yl dYWhYX 'cZYj YfmcbY ']b 'h\Y 'l BGK 'Wcaaib]hm
- `cWUHY 'gYfj]WYg'UbX `]bZcfa UH]cb'UVci hI BGK 'UbX'I BGK '@]VfUfm

5 WUXYa]W±bZcfa Uh]cb

: 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/
- fYi]Yk 'cZa Uf_g/
- I BGK '< YU'h\ 'UbX'GUZYhm'dc`]\\\Yg/
- YI Ua]bUhcb dfcWXi fYg/
- gdYWJU`Wcbg]XYfUHjcb`]b`H\Y`Yj YbhcZ]``bYgg`cf`a]gUXj Ybh fY/
- gh XYbhYei]mUbX X]gUV]`]m/
- UbX'ch\Yf'YggYbhJU`'UWUXYa]W]bZcfa UhJcbz'gYY

\hdg.#k k k "Ufhg"i bgk "YXi "Ui #W ffYbhgh XYbhg#UWJXYa]W]bZcfa Uh]cb#dfchcWc`g![i]XY`]bYg#

.

⇒a U[Y'7fYX]h

GmbYf[]Yg^]b^GcibX^&\$%*

7F = 7CG

7 F = 7 C G 'Dfcj]XYf'7 cXY. '\$\$\$-,;

5Wbck YX[Ya YbhcZ7ci blfm

 $K_{Y'UW\underline{D}bck,YX[Y'h,Y'6YXY[U''dYcd'Y'k \c'UfY'h,Y'hfUX]h]cbU''W ghcX]Ubg'cZh,Y''UbXg'cb'k \] WX'I_BGK_{Ybg]b[hcb'WJa_di_q']q''cWJhYX'''$