

ARTS2871

Dck Yf'UbX'Dck YfYggbYgg

HYfa 'H\fYY''##'&\$%-

7ci fgY⁻Cj Yfj]Yk

GHUZZ:7cbHUWh8YHJ]`g`

7cbj Ybcfg

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A Y`Ub]Y`K \]HY		K YXbYgXUmg '\$!%\$.'\$Uaž %'\$!&.'\$dažUbX VmUddc]bhaYbh	A 6%* &	\$&'-',) &'\$(

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Fcca '%) -

A cfj Yb 6fck b 7 &\$

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

7ci fgY 8YW] g

7 fYX]hDc]bhg * *

Gi a a UfmcZh\Y 7ci fgY

Gi VYWn5fYU. EaU[a'aYk S`V3`fZdaba'aYk

K \Uhi]g'dck Yf3''K \UhiUfY']rg'YZZYWrg3''K \Uhi]g'dck Yffig'fY`Uh]cb'rc'dck YfYggbYgg3'Dck Yf']g'U Z bXUa YbrU''WcbW'dh]b'rh\Y'gcW]U''gW]YbWYg'''=i]g'U'gc'cbY'cZh\Y'a cghWcbhYghYX'''=b'rh\]g'Wci fgYž'mci 'k]'' Wcbg]XYf'X]ZZYfYbhUddfcUWXYg'rc'dck Yf'Zfca 'rh\Y'dYfgdYWf] Y'cZdck Yffig'fY`Uh]cb'rc'dck Yf'YggbYgg''K Y k]'''Wcbg]XYf'\ck 'dck Yf'UbX'dck Yf'YggbYgg'UfY'i bXYfgrcx'UbX'YI dYf]YbWYX']b'fY`Uh]cb'rc'Wca dUb]cb WcbWfdrg'gi WX'Ug'j]c'YbWYž'ZfYYXca ž_bck 'YX[Yžgcj YfY][brmž'VcX]Ygž'WfYUh]j]hmž'UbX'f][\rangle hg'''

7 ci fgY @YUfb]b[Ci hWca Yg

%" FYWc[b]gY'_Ym]ggi Yg']b'h\Ycf]n]b['h\Y']bhYfgYWf]cb'cZdck Yf'k]h\'dck YfYggbYgg

- &" 8]qh]b[i]q\ 'VYhk YYb 'X]ZZYfYbhdYfqdYWIj Yq cb 'dck Yf
- ' "DfuWiW fYUX]b['Ug'U'a cXY cZUWij Y 'UbU'miWu`Yb[U[Ya Ybi'
- $(\ "5dd`mig_]`g`UggcV]UhYX`k\]h\ `gWkc`Ufmi]bei\]fmi]bWi\ X]b[\ 'h\ cgY`fY`UhYX`hc`Wf]h]WU``UbU`mg]gž`Uf[\ i\ a\ YbhUbX`k\ f]hHYb`Yl\ dfYgg]cb$

HYUWX]b['GhfUhY[]Yq'

 $H^{g'}WcifqY']g'VUgYX'cb'hY'Zc``ck]b['df]bW]d`Yg.$

%"```Hc`WfYUhY``Ub`]bhY``YWhiU``migh]a i``Uh]b[`gdUWY`Zcf`ghiXYbhg`h\UhifYkUfXg`UWh]jY`Yb[U[YaYbhk]h\W\U``Yb[]b[`WcbWYdhg

&"····HcfYUXdf]a UfmiYI hq'k]h\ci hi\Y'i qY'cZqYWbXUfmgci fWgž'Wba a YblUf]Yg'cf'X][YglYX'qi a a Uf]Yg"

'"```Hc`ZcghYf`X]U`c[iY`]b`UbX`cihcZWUgg`VYlkYYb`ghiXYbhgž`UbX`k]h\`h\Y]f`hYUW\Yfg`]b`cfXYf`hc`WfYUhY`U Wcaaib]micZ`YUfbYfg

(""Hc fYUX [YbYfci g`m

) "·····Hc·WfYUhY·U·WccdYfUh]; Y··YUfb]b[·Ybj]fcba Ybh

*"····Hc:YbWci fU[Y:ghi XYbhifYgdcbg]V]`]lmihc:h\Y:VfcUXYf:UWJXYa]WWca a i b]lm

 $H\setminus g'WcifgY'k]``VY'U'fkc!\cif``YWfifY'UbX'cbY!\cif`fifncf]U`''$

@YWhifYq

H\Y``YWi fYg`k]```WcaV]bY`h\Y`hYW\b]eiYg`cZU`hfUX]h]cbU```YWi fY`k]h\`h\Y`]bhYfUWjcb`UbX`X]U`c[iY`hmd]WU``m UggcWJUhYX`k]h\`hincf]U`g"``Ghi XYbhg`UfY`YbWci fU[YX`hc`dUfh]WJdUhY`UWhj Y`m]b``YWhi fYg`VmeiYgh]cb]b[`UbX WcaaYbh]b[`cb`h\Y`Wci fgY`aUhYf]U`"``@YWhi fYg`k]```fY`mcb`hYIhiU``WcaaYbhUfmž`Zj`a`UbX`j]giU``]aU[YfmhcYId`]WUhY`h\Y`WcbWYdhq`Zci bX`]b`h\Y`fYUX]b[g"

Hi hcf]U`g

 $\label{thm:continuity} Hi hcf]U`g`k\]```VY`i gYX`hc`cf[\ Ub]nY`ga \ U```[\ fci\ dg`hc`YghUV`]g\ `U`Wc```UVcfUh]j\ Y`k\ cf_]b[\ `Ybj\]fcba\ Ybhk\ \YfY\ ghi\ XYbhg`WUb``YUfb`Zfca \ `cbY`Ubch\Yf''$

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FYUX]b[Ei Ygh]cbg

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5ggYgga Ybh

5 hmYbXUbWY Dc`]Wm

#5 'fk]g'Wci fgY'mci 'UfY'Yl dYWYX'lc 'UfHY'bX'Uh'YUgh', \$1 'cZWUggYg'"H\]g'a YUbg'h Uhmci 'a i gh'UfHY'bX '%\$#\&'cZhi hcf]U'g"'=Zmci 'UfHY'bX''Ygg'h\Ub', \$1 'cZmci f'WUggYg'mci 'a UmVY'fYZ gYX'Z]bU`'UggYgga Ybh''H\]g a YUbg'h\Uh'YUgh', \$1 'cZdcgg]V'Y'WUggYg'mci f'Z]bU`'UggY[ba Ybha UmfYWY]j Y'U a Uf_'cZnYfc": cf'h\Y'di fdcgY'cZUfHY'bXUbW'a cb]hcf]b[ž'h\Y'Z]bU`'UggYgga Ybh'Zcf'h\]g'Wci fgY']g'h\Y K cf_Vcc_'k cff\\') \$1 'cZmci f'cj YfU`''[fUXY'Zcf'h\]g'Wci fgY"'H\]g']g'h\Y'UggYgga Ybh']hYa 'h\Uhk]`'VY [fUXYX'UhnYfc']Zmci 'Xc'bcha YYhf\Y'UfHYbXUbW'fYei]fYa Ybh'Zcf'h\]g'Wci fgY"

5ggYgga YbhHUg_g

5ggYgga Ybh'hUg_	K Y][\h	8i Y'8UHY	Gh XYbh@YUfb]b[Ci hWca Ygʻ5ggYggYX
K cf_Vcc_) \$1	K YY_'* 'UbX'K YY_'%\$	&Ž Ž(
; fci d': UVJ]HUH]cb'	&\$ı	K YY_g") "hc"-	%ž&
9ggUmi	' \$ı	&) #%#&\$% `%%) - `DA	% <u>ž&</u> ž(

5ggYgga Ybh'8YhJ]`g

5ggYgga Ybh% K cf_Vcc_

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@Yb[h\.)\$\$ k cfXg dYf k YY_

8YHJ]`g. `Ghi XYbhg`k]```dfYdUfY`k f]hhYb`Ybhf]Yg`cZ%l&`dU[Yg`cb`h\Y`Ugg][bYX`fYUX]b[g`YUW\`k YY_"`H\Y k cf_`k]```VY`gi Va]hhYX`UbX`UggYggYX`dYf]cX]\WJ``mh\fci [\`h\Y`hYfa ": YYXVU\W_.`K f]hhYb`\\cappaca a Ybhg`UbX [fUXYX`U[U]bghU`\Wf]hYf]U`g\YYh'

5XX]hcbU`XYhJ]`q.

K cf_Vcc_5ggYgga Ybh

H\YfY UfY k c gi Va]gg]cbg Zcf h\Y k cf_Vcc_.

% K YY_'* 'f**A cbXUmž**'& C WcVYf'& \$\% L ''D \YUgY'gi Va]hmci f'k cf_Vcc_'Ybhf] Yg'Zcf'K YY_g'& z'' z'('UbX') Zcf'[fUXYX'ZYYXVUW "

&ŁK YY_'%\$`f**A cbXUmž**'% 'Bcj Ya VYf'&\$% Ł'D`YUgY'gi Va]hmci f'k cf_Vcc_'Ybhf]Yg'Zcf'K YY_g'*z'+z', 'UbX - 'Zcf'[fUXYX'ZYYXVUW_

Mci 'UfY'fYei]fYX'hc'dfYdUfY'U'k cf_Vcc_'YblfmYUW\'k YY_"'''Mci f'k cf_Vcc_g'k]```fYWcfX'mci f'fYUW]cbg'hc h\Y'fYUX]b[gž'UbX'dcgg]V'mž'mci f'fYgdcbgYg'hc'X]gW gg]cbg']b'`YWhi fYg'UbX'hi hcf]U'"''H\Y'k cf_Vcc_']g]bhYbXYX'Ug'U'hcc''h\Uhk]``'U'`ck 'mci 'hc'fYZYWhcb'mci f'h\ci [\hg'Ug'h\YmW\Ub[Y'UbX'XY] Y'cd'cj Yf'h\Y gYa YghYf"''K Y'UfY'dUfh]W'`Uf'm]bhYfYghYX']b'\ck 'h\Y'fYUX]b[g'W\U``Yb[Y'mci f'dfYj]ci g'Uggi a dh]cbgž'k \Uh h\YmYbWci fU[YX'mci 'hc'h\]b_'UVci h]b'bYk 'k Umgž'UbX'k \Uhmci 'dYfWY]j Y'h\Y]f'`]a]hg'hc'VY"'F YUX]b[']gb'h

Gi Va]gg]cb bchYg.H\]g gi Va]gg]cb k]```]bWi XY

 $\label{thm:continuous} \begin{tabular}{ll} Hi & fb & fb & gYM &$

5ggYgga Ybh&; fci d: UWj]hUhjcb

GhUfh'XUhY.

@Yb[h\. &\$ a]bi hYg fa Ul]a i a Ł

8 YHU]`g. `Ghi XYbhg`k]```XYg][b`Ub`]b!WUgg`UWhjj]hmf&\$`a]b\LinkUhVf]b[g`]bhc`fY`]YZUb`]a dcfHubhUgdYWhcZh\YhYl hi bXYf`Wcbg]XYfUhjcb"`H\Ymk]```VY`UggYggYX`cb`h\Y]f`UV]`]hmhc`k cf_`Wc```UVcfUhjj Y`mUbX`hc`Yl Ua]bY`h\Y dfUWhjWU``]a d`]WUhjcbg`cZh\Y`fYUX]b[`Zcf`Yj YfmXUm`]ZY"`Ghi XYbhg`k]```VY`fYei]fYX`hc`dUfhjWjdUhY`]b`cbY

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BGHFI7H€BG.

 $=XYbh]Zm\&cf''X]gh]bWhYUfb]b[YIdYf]YbWYg'mci'\UX']b'h\Y'WcifgY''$

: cf'YUWX'cbY.

%"8YgWf]dh]cb. ``9ghU^`]g\ 'h\Y`WcbhYI hZcf`h\]g``YUfb]b[`YI dYf]YbWY`fkY"["žk\Uhk Ug`h\Y`hcd]WcZghi Xmžk Ug]hUb`UggYgga YbhHUg_`cf`Ub`YI dYf]YbWY`h\Uhmci `\UX`]b`WUggžYhW\!"`=b`g\cfhžVf]YZmhY```i g`k\Uh \UddYbYXžVi h_YYd`]hg\cfh

&"5bU`mg]g#5dd`]WUh]cb. "Bck žhY``i g'k \mih\]g'Yl dYf]YbW'k Ug']a dcftUbh'Zcf'mci "''l g]b['h\Y'Ug][bYX fYUX]b[žhY``i g'\ck ']h\\Ug'XYYdYbYX'mci f'i bXYfghUbX]b['cZdck Yf']b'mci f'X]gW]d`]bUfm'WcbhYl h''< YfY'UfY gca Y'dfca dhg.

- HY```i g`k \Uh'mci f`dfYj]ci g`dYfgdYWhjj Yg#bg][\hg#Uggi a dhjcbg`k YfY"\``H\]g`]g`Ub`cddcfhi b]hmhc YghUV`]g\`mci f`df]cf`_bck `YX[Y`UbX`YI dYf]YbWY"
- HY``i g'k \UnbYk ']XYUg'cf']bg][\hg'W\U``Yb[YX'mci f'dYfgdYWh]j Y'cf'Uggi a dh]cbg"''Hfmhc
 Y'UVcfUhY'cb'h\Y'bUhi fY'cZh\YgY'YI dYf]YbWrgž']XYUg'UbX'cVgYfj Uh]cbg'UbX'hfmhc'Ufh]W'`UhY'k\Uh
 mci 'Zci bX'WcbZ g]b[ž]bgd]f]b[žX]ZZ]W'`hcf']bhYfYgh]b[žUbX'k\m'

dfcWrgg'Ug'h\Y'Wci fgY'\Ug'dfc[fYggYX'Vm]bhYffc[Uh]b['mci f'dfYj]ci g'Uggi a dh]cbg"

8Yj Y`cda YbhcZ'⇒XYUg"'H\]g'UXXfYggYg'k\Yh\Yf'mci '\Uj Y'Wcbg]XYfYX'\ck 'mci f']XYUg'UVci hdck Yf'\Uj Y W\Ub[YX'gdYW]Z]WU``m]b'fY`Uh]cb'hc'mci f'X]gW]d`]bY"''\Vci 'k]```VY'UggYggYX'cb'\ck 'mci f'i bXYfghUbX]b['cZ dck Yf'UbX'dck Yf'YggbYgg'\Ug'XYj Y`cdYXž'WUf]Z]YX'cf'dfc[fYggYX"

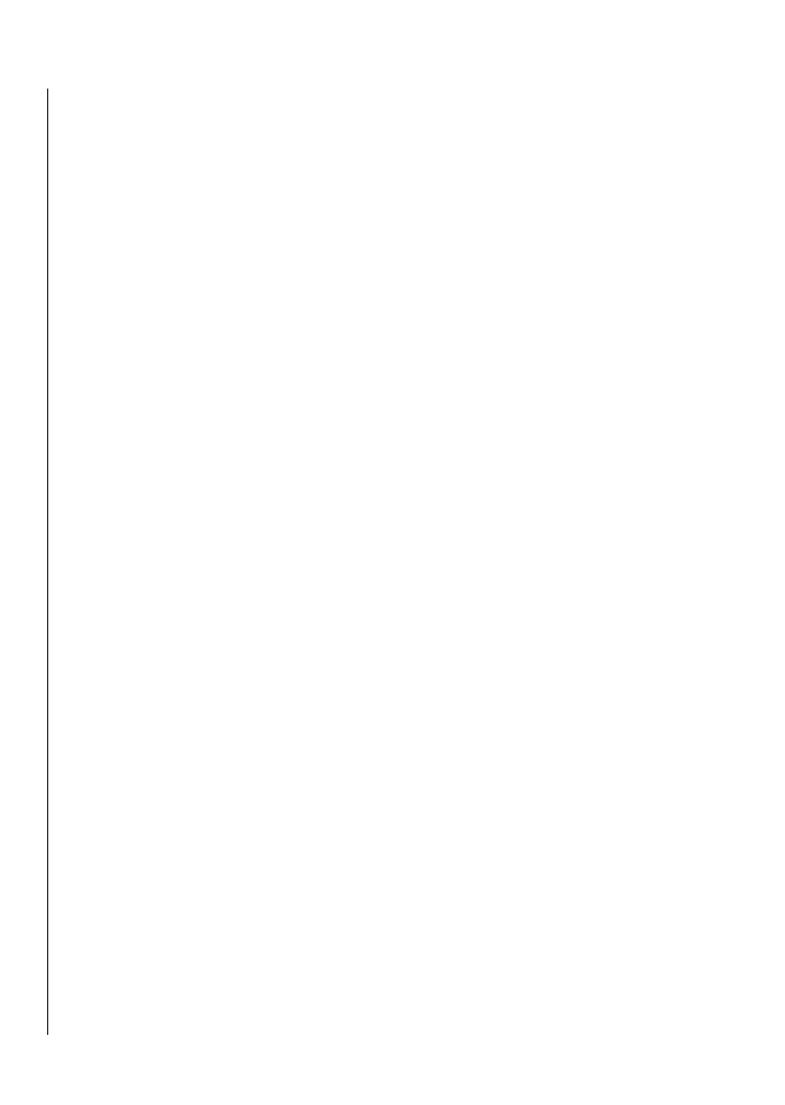
 $\label{eq:family} FYZYfYbW] b[""H\] g"fYei"] fYg"mci "hc"fYZYfYbW" dUggU[Ygž'h\Ya Yg"UbX"] XYUg"UWW fUhY`m" \\$

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	Hi hcf]U`	G\cdYž>UbYh<]bgcb":"GYdUfUhY'Vi h'9ei U`. 8 i f_\Y]a fig'F YgdcbgY'hc'h\Y'K ca Ub'E i Ygh]cb"" GcW]c`c[]\WJ`=bei]fm*("%f\%-(\L'&' -' *" Ga]\h\z'D\]`]d":"8 i f_\Y]a 'UbX'7f]a]bc`c[m F Y\\cbgfi \W]b['h\Y'@Y[U\\m'":5 i ghfU`]\Ub\' BYk NYU`UbX'>ci fbU`cZ7f]a]bc`c[m(%" 'f&\$\$, \L '''-'((" J Y]\\\\z'?YbbYh\":"Gc\\]U``Gc`]\XUf]\m\UbX'h\Y'Dck Yf'cZ 7 cb\\fu\\\"'>ci fbU``cZ'@Uk 'UbX'Gc\\]Y\m\', "&'f&\$\\\\\"-\&\(") 5g'g\\XYXi \YX"
K YY_'(.'+'C WcVYf'!'%%C WcVYf	@YWhifY Hihcf]U` FYUX]b[K YY(.; "K ": ' <y[y`.'a "'f%="" ":="" "k="" \$+@'+\xydybxybw''ubx="" ''ci="" '@cfxg\]d'ubx="" 'yx"="" **********************************<="" ++'0%="" 5g'gwxyxi="" 6cbxu[y']b'bzw="" 7="" 8ydybxybw'czgy'z="" <y[y'z;=""]'yf2"'ci=""]fyx'f="" a="" a'ayk="" a_="" axe="" b[df="" b]j="" cbgw]ci="" f="" fffubg":5"j"="" gbygg.="" td="" ughyf'ubx'g'uj="" w="" y="" yei="" yfg]lmdfyggz'dd"="" yux]b[="" zcfx'i="" zcfx.=""></y[y`.'a>

c.7



	D]b_UfXžHYffm":" <y[y``ubx`aufi"":h\y`cizcfx <ubxvcc_'czh\y`<]ghcfmcz9h\]wg":cizcfx Ib]jYfg]lmiDfYggž&\$%":</ubxvcc_'czh\y`<]ghcfmcz9h\]wg":cizcfx </y[y``ubx`aufi"":h\y`cizcfx

	Hi hcf]U` 5ggYgga Ybh <ca cf_<="" th="" yk=""><th>K \]a ghYfž'GUa ž'UbX'GWchi@Ug\"'A UI 'K YVYfž F UhJcbU`]mi'UbX'A cXYfb]mi'<cvc_yb. 'a="" 'fhi="" 'fk="" 'k="" *="" 5="" 8="" :="" ;=""]fghik=""]gg]cb.="" cbxumž'c="" cf_vcc_'gi="" cf_vcc_'ybhfmhc'wcbwi="" ci="" d':="" d'yhy="" f="" f'uzhyf!wugg'k="" fb]hjbł="" fci="" fubwjgž'&\$%("="" hcf]u`h\]g'k="" humcf'ubx':="" hyx[="" i="" mci="" th="" ua="" uhy.="" uwj]huhjcbg'wcbhjbi="" va="" wcvyf'&%ghž'-="" xy'k="" y"="" y'8="" yvyfł"<="" yy_="" yy_g'&ž'="" yy_ž'wca="" yž="" zhyf'hi="" ž'(ž'ubx')=""></cvc_yb.></th></ca>	K \]a ghYfž'GUa ž'UbX'GWchi@Ug\"'A UI 'K YVYfž F UhJcbU`]mi'UbX'A cXYfb]mi' <cvc_yb. 'a="" 'fhi="" 'fk="" 'k="" *="" 5="" 8="" :="" ;=""]fghik=""]gg]cb.="" cbxumž'c="" cf_vcc_'gi="" cf_vcc_'ybhfmhc'wcbwi="" ci="" d':="" d'yhy="" f="" f'uzhyf!wugg'k="" fb]hjbł="" fci="" fubwjgž'&\$%("="" hcf]u`h\]g'k="" humcf'ubx':="" hyx[="" i="" mci="" th="" ua="" uhy.="" uwj]huhjcbg'wcbhjbi="" va="" wcvyf'&%ghž'-="" xy'k="" y"="" y'8="" yvyfł"<="" yy_="" yy_g'&ž'="" yy_ž'wca="" yž="" zhyf'hi="" ž'(ž'ubx')=""></cvc_yb.>
		6YZcfY``YWifYz`dfYdUfY mcif`VYZcfY!WUgg`kcf_Vcc_`YbHmZcf`KYY_`+ fGW.a]Ht!"
K YY_'+.'&, 'C WcVYf'!'% Bcj Ya VYf	@YWhifY FYUX]b[K YY_'+.'7 Uf`'GW\a]th''9bYa]Yg'UbX'GtUtYg FYei]fYX'FYUX]b[
		GVXa]htž7Uf`f&\$\$+`O%&+OEFZW5a`UWbfaXfZWBa{f[US^z7\]WU[c.``Ib]jYfg]hmcZ7\]WU[c`DfYggždd"`%!*\$"
		Gi dd`Ya YbhUfmF YUX]b['fF YWca a YbXYXŁ'! 5j U]`UV`Y'j]U'@Y[Ubhc
		6YbXYfg_mž>cgYd\`K "`K "`"7 Uf``GW\a]thiUbX`t\Y K Y]a Uf`F][\th""H\Y; Yfa Ub`F][\th]b`t\Y`K Y]a Uf F Ydi V`]W`Gh X]Yg`]b`t\Y`<]gtcfmcZ; Yfa Ub 7 cbgYfj Ut]ga ž'B Ut]cbU`]ga ž'UbX`5bt]gYa]t]ga " 6Yf[\U\b`6cc_gž&\$%("`&*, -&-\$"`
		; i``]ž'6fi bc"' <iaub]hm'ubx'h\y'9byam'<ck'9h\]wg 7Ub'F]X'Dc`]h]Wg'cZJ]c`YbWY"'BYk'Mcf'DU`[fUjY AUWa]``Ub'IGž'&\$%("'</iaub]hm'ubx'h\y'9byam'<ck'9h\]wg
		?Y``mž8ibWJb"'H\Y'GHJHY'cZH\Y'Dc`]r]WJ`. 7cbWYdh]cbg'cZDc`]r]Wg'UbX'H\Y'GHJHY']b'H\Y H\ci[\hcZAUI'KYVYfž'7Uf`'GW\a]Hrž'UbX':fUbn BYiaUbb"'CIZcfX/BYk'Mcf'CIZcfX'Ib]jYfg]hm DfYggž'&\$\$'"''
		AciZYž7\UbHJ`"`H\Y`FYhifb`cZh\Y`Dc`]h]WJ`" @cbXcb/BYk`Mcf`JYfgcž%-' "`
		G`ca dž; UVf]Y``U"`7 Uf`'GW\a]lhiUbX'lh\Y'Dc`]ljWg'cZ <cglj`]lmžj]c`ybwy'ubx'hyffcf"'@cbxcb.'du`[="" fuj="" y<br="">A UWa]``Ub'l ?ž'&\$\$-"'</cglj`]lmžj>
		HUi VYgž'>UV¢V"`Hc`7Uf`GW.a]hr@YhYfg`UbX

	Hi hcf]U` C b`]bY'5Whj]hm < ca Yk cf_	FYZYWIJcbg" BYk "Mcf "7 c`i a V]U'I b]j Yfg]lmiDfYggž&\$%" K]'XYžA UfWXY" "A YYIJb['C ddcg]hYg. 'H\Y'Dc`]hJWU`H\Yc`c[]Yg'cZK U'hYf'6Yb'Ua]b'UbX'7 Uf'GWXa]hti" D\]'cgcd\mUbX'F\Yhcf]W(("("f&\$%\L" *' -' , %" ; fci d: UWJ'hUrJcbg WcbhJbi Y" GYY'A ccX'Y'Zcf'8YhU]`g" 5ZYf'h hcf]U''h\]g'k YY_ž'Wca d`YhY mci f'UZhYf!WUgg'k cf_Vcc_'Ybhfmhc'WcbWi XY'K YY_+'fGWXa]ht!" 6YZcfY''YWi fYž'dfYdUfY mci f'VYZcfY!WUgg'k cf_Vcc_'YbhfmZcf'K YY_', f5fYbXht"
K YY_', .'('Bcj Ya VYf'!', Bcj Ya VYf	@YVVni fY	K YY_', .' <ubbu\'5fybxh'f [="" yyg'ubx<br="" yz="">F][\hg'fBc Ya VYf'*Ł</ubbu\'5fybxh'f>
	F YUX]b[F Yei]fYX'F YUX]b[<ubbul\'5fybxhff% "''="" %@'h\y'8yw]by'czh\y="" &*"&f&\$\mathbb{\text{n}}\text{y}'''-\mathbb{\text{y}}\text{y}''''="" '5bx'h\y'hfux]h]cb'cz="" 'mcf="" ('0%)="" (+"&f&\$\$&&&&+'!'%"'="" (b)="" -="" .="" 5fybxhz'<="" 5j="" 6fubb][="" 6yb\uv]vz'gymu"'h\y'f][\hg'czc="" 7="" <cb][="" <ufwci="" [\h'eau[s^d="" [e_z'byk="" [i="" \text{y}''''''''''''''''''''''''''''''''''''<=""]'.=""]bc'c[mubx';=""]c'ybw'''''<agd=""]u'@y[ubhc="" a="" axfafs\ffsds`="" b]]="" b]j="" buhcb ghuh'ubx'h\y'9bx'czh\y'f][\hg'cza="" byk="" c="" ci="" dd'ya="" dy['e="" f]a="" fhz'dd"'&*+!'\$&"="" gh]by"'6ymcbx'h\y'6ubu']mcz9j="" gi="" h\yfg.'5']ybgz'f="" k="" s^ax;`fwd="" sf[a`s^3="" td="" u]'uv'y'j="" ua="" ub']b'fzwa="" ubbu\"''f="" ubbu\"'?="" ubz'5i="" uf'a="" ufl="" vf[x[y="" vf[x[y'i="" w\""'8]zyfybwyg="" wewsdjzł="" xs[db'&'"%'f%-*-ł'%']')"="" ybcw]xy'''%ghyx"'c="" ybhufmf="" ybxyxł'!="" yfg]mdfyggz'&\$\$(="" yfg]mdfyggz'&\$%="" yg]xybhg'ubx'7]h]nybg"'7="" yghyfb'dc']h]wu'h\ci="" yux]b['ff="" ywca="" yzyw]cbg'cb'j="" z'6cbb]y"'"5fybxhcb'h\y'7="" zcfx="" zcfx.="" =""></ubbul\'5fybxhff%>

K YY_``%%Bcj Ya VYf'! %) Bcj Ya VYf	Hi hcf]U' C b']bY'5Whj]hm <ca @ywh="" cf_="" f="" fy="" th="" yk="" yux]b[<=""><th>A Ugʻjbzʻʻ Ja VYFmʻʻʻH\Yʻ; YbXYFBYi HTUʻ; Ya JbJgaʻcZ < UbbU\ 5 fYbXhʻʻ < mdUhJu & ʻʻʻ f&\$% Łʻ),) = *\$%′ A cfi nnJžBcfa Uʻʻ TUJFYʻʻGdYU_b[h\fci [\h\Y A Ug_ \cdot U\ 5 fYbXh\UbX h\Y`Dc`Jh\yʻ cZGc\y\Uʻ-XYbhJmʻ \h\UbZb\Y5 fYbXhUbX h\Y`Dc`Jh\yʻ cZGc\y\Uʻ-XYbhJmʻ \h\UbZb\YcbZ'scYʻʻʻ fca '5 f]ghchY hc '5 fYbXh '5 D\Ybca Ybcʻc[]\WJʻʻ9 I dʻcfUhjcbʻcZ; cfa gʻcZ '? bck 'YX[Y 'UbX DfU\wJ\W'] b h\Y`7 cbHI hcZ7 \]\X DfchY\wJcbGc\WJʻ`K cf_ jbʻh\YʻI ? **** Ei U'JhJhJ Y Gc\y\U`K cf_ \%' *\%f&\$\fk** \cdot \(-\k' \) *\%f\y\ \cdot \(-\k' \)</th></ca>	A Ugʻjbzʻʻ Ja VYFmʻʻʻH\Yʻ; YbXYFBYi HTUʻ; Ya JbJgaʻcZ < UbbU\ 5 fYbXhʻʻ < mdUhJu & ʻʻʻ f&\$% Łʻ),) = *\$%′ A cfi nnJžBcfa Uʻʻ TUJFYʻʻGdYU_b[h\fci [\h\Y A Ug_ \cdot U\ 5 fYbXh\UbX h\Y`Dc`Jh\yʻ cZGc\y\Uʻ-XYbhJmʻ \h\UbZb\Y5 fYbXhUbX h\Y`Dc`Jh\yʻ cZGc\y\Uʻ-XYbhJmʻ \h\UbZb\YcbZ'scYʻʻʻ fca '5 f]ghchY hc '5 fYbXh '5 D\Ybca Ybcʻc[]\WJʻʻ9 I dʻcfUhjcbʻcZ; cfa gʻcZ '? bck 'YX[Y 'UbX DfU\wJ\W'] b h\Y`7 cbHI hcZ7 \]\X DfchY\wJcbGc\WJʻ`K cf_ jbʻh\YʻI ? **** Ei U'JhJhJ Y Gc\y\U`K cf_ \%' *\%f&\$\fk** \cdot \(-\k' \) *\%f\y\ \cdot \(-\k' \)
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FYgci fWyg

DfYgWf]VYX F Ygci fWYg

 $Gh XYbhg `UfY `fYei]fYX `hc `fYUX `h\Y `fYUX]b[g`Wcad]`YX`]b `h\Y `5FHG\&, +%Gh Xm?]h `lh' H\]g`_]h]g`Uj U]`UV`Y `Zcfdi fW.UgY`Zfca `h\Y `IBGK `6cc_g\cd"$

 $\label{limit} D`YUgY`Vf]b[\ 'mci\ f`5FHG\&,\ +\%Ghi\ Xm'?\]h'hc`5@@`7`UggYg"`Mci\ f`ghi\ Xm'_]h']bWi\ XYg`U`WcdmcZh\]g Wci\ fgY`ci\ h`]bY"$

FYWca a YbXYX FYgci fWyg

B#5

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

Ghi XYbhiZYXVUW_k]``VY`[Uh\YfYX`h\fci [\a m9I dYf]YbWr`gi fj Ymgž'UbX`mci `k]``VY`[]j Yb`cddcfhi b]hjYg h\fci [\ci hh\Y`gYa YghYf`hc`[]j Y`]bZcfa U``ZYYXVUW_"'H\]g`Wci fgY`fYWY]j YX`YI W```YbhZYYXVUW_'Zfca ``Ugh mYUffig`Wc\cfhcZghi XYbhg`]b`&\$% "'H\Yma UXY`rk c`]a dcfhUbhgi [[Ygh]cbg`h\Uh=\Uj Y`hU_Yb`cb`VcUfX.

%"5ggYgga Ybh'Ghfi Whi fY'! "=\Uj Y'a cX]ZJYX"h\Y'UggYgga Ybh'ghfi Whi fY'hc'UWWca a cXUhY'h\Y'' Ž'WU'YbXUf"

&"'5bbci bWa Ybhg'!'=k]``i d`cUX'j]XYc'gY[a Ybhg'hc'A ccX`Y']b'cfXYf'hc'UXXfYgg']ggi Yg'fY`UhYX'hc UggYgga Ybh'UbX'Wci fgY'Vi q]bYgg"'H\]g'k]``[]j Y'i g'a cfY'ha Y']b'`YWi fYg'hc'X]gW gg'Wci fgY'WcbHYbh'

=j Yfma i W. 'UddfYVJUhY 'h.]g 'ZYYXVUW_ž'UbX ``cc_'Zcfk UfX 'hc']a d`Ya Ybh]b['h. YgY'gi [[Yg]cbg']b '&\$% "'6Ygh k]g\Yg 'Zcf'h. Y 'bYk 'hYfa "

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

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

_Zmci YbWci bhYf'U'dfcV`Ya 'k \Yb'UhYa dhJb['hc'gi Va]hmci f'Ugg][ba Ybhh\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'mYUft'' =Zmci
UfY'i bUV`Y'hc'gi Va]hmci f'Ugg][ba YbhXi Y'hc'U'ZUi 'hk]h\'Hi fb]hJb'mci 'a Um'Udd'mZcf'Ub'Y! hYbg]cbžVi hmci
a i ghfYhU]b'mci f'hJW_Yhbi a VYf'Zfca '9! hYfbU``Gi ddcfhfU'cb['k]h\'Ubmch\Yf'fY`Yj UbhXcW a Ybhgt'hc
]bWi XY'Ug'Yj]XYbW'hc'gi ddcfhmci f'Y! hYbg]cb'Udd`]WUhJcb'' =Zmci 'Ya U]`'9! hYfbU``Gi ddcfhmci 'k]``

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

D`U[]Uf]ga `]g`i g]b['h\Y`k cfXg`cf`]XYUg`cZch\Yfg`UbX`dfYgYbh]b['h\Ya `Ug`mci f`ck b"'\lefi\Wb'hU_Y`a Ubm Zcfa gžZfca `XY`]VYfUhY`W\YUh]b['hc`UVW]XYbhU`mWcdm]b['Zfca `U`gci f\W' k]h\ci hUW_bck `YX[Ya Ybh'

IBGK [fcidgdu[]Uf]ga]bhch\YZc``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 cghmfYhJ]b]b['h\Y'cf][]bU` ghfi Wh fY 'UbX#cf'dfc[fYgg]cb'cZ]XYUg'cZh\Y'cf][]bU'žUbX']bZcfa Uh]cb'k]h\ci hUW_bck `YX[Ya Ybh'H\]g'U`gc Udd`]Yg']b'dfYgYbhUh]cbg'k \YfY'gca YcbY'dUfUd\fUgYg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci hWfYX]hUbX'hc d]YW]b['hc[Yh\Yf'ei chYg'UbX'dUfUd\fUgYg']bhc'U'bYk 'k \c`Yžk]h\ci hUddfcdf]UhY'fYZYfYbW]b["

7 c``i g]cb. 'k cf_]b['k]th 'cth Yfg'Vi hidUgg]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_'thc'Ubcth Yf'ghi XYbh'VYZcfY'th Y'Xi Y'XUHYZcf'Zcf'th Y'di fdcgY'cZth Ya

- 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'UgdYWng'cZ9@+69'k]``\Y`d'mci 'a U_Y'h\Y'a cghcZmci f'ghi X]Yg'Uh'l BGK "'\\hd.#gi VYWn[i]XYg"`]VfUfm'i bgk "YXi "Ui #\`]gY#UVci hY`]gY

5 WUXYa]W±bZcfa Uhjcb