



**MINE8680**

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GHJZZ7cbhJWw8YHU]`g

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[9b\] \]bYYf\]b\[ `Gh XYbhGYfj \]Wg`](#)

9.GYfj]Wg ]Ww ]b[ 4 i bgk "YXi "Ui





## 5ggYgga Ybh

7ci fgY 7ca d'Yh]cb`

7ci fgY Wca d'Yh]cb`fYei ]fYg.

•gi Va ]gg]cb`cZU`UggYgga Ybh]hYa g/ZU]i fY`hc`gi Va ]hU`UggYgga Ybh]hYa g`k ]`fYgi`h]b`hY`Uk UfX`cZUb  
I`bgUh]gZUWc`fm: U]i fY`fl : E[ fUXY`Zcf`hY`7ci fgY"

5ggYgga YbhF Yei ]fYa Ybhg`

- 5`hY`Wci fgY`a UfYf]U`g`UbX`Ugg][ ba Ybhg`k ]`VY`Uj U]UV`Y`cb`]bY`h`fci [ \`A ccX`Y`"5VWYgg`h`hY  
A ccX`Y`g]h`]g`j ]U`hY`A ccX`Y`]Wc`b`cb`hY`A m BGK` \ca YdU[ YZcf`Uh  
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F Ygci fWg

DfYgW]VYX F Ygci fWg

F YZfYbW A UHf]Ug

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5i ghfU]U'fA 95E" f@UHghYX]h]cb'Uj U]UVY Zcf Xck b'cUX Zca 'hY'GWcc`k YVg]h'cfU\UfXWdm  
j Yfg]cb ]g]Uj U]UVY Zca 'hY' BGK '6cc\_g\cdŁ  
&" ; i ]XY h'5i h'cfg'f5i ghfU]Ug]Ub'g]h]h' h'cZA ]b]b[ 'UbX'A YHU'i f[ m'A Y'Vci fbYŁ'f5j U]UVY Zcf  
Xck b'cUX Zca 'hY'5i g=A A 'k YVg]h]Ł  
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(" D]bY" F ">"-% - &" F ]g\_ UbU]mg]g'XYg][ b'Udd ]W]h]cbg]b'a ]b]b[ '[ Yca YW]Ub]W]g" F dS` ež;` ef ? [ ž  
? WFS ^Z/E WUfZ3 fi%\$%ždd"%(-!%) , "  
) " F cgYbVYi h'ž9"-%, %'Hk c!dc]bhYg]ja UhYg]b'dfcVUV] ]h]Yg" <ž3bbž? SfZž? aVW]f Y ) ždd"  
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F dS` ež;` ef ? \* [ S^aX]a U]c]f ]ci ž>"&\$%&" K \YfY Xc'hY'XUHU'Wca Y Zca 3 F dS` ež;` ef ? [ ž? WFS ^Z/E WUfZ3 fi%\$%ždd"%(-!%) [ ž? WFS ^Z/E WUfZ3 fi%\$%ždd"%(-!%)  
FWUZ` a`hYkžJc`"%%&f(Łždd"&' \* '-&( +"  
+" Gi cf]bYb]ž: "H"ž? U]gYfžD"? "UbX'HUbbUbž8 "8"i &\$%\$@"@\_Y']\ccX'gh]h]gh]WZcf]bhYfdYf]h]cb'cZ h'Y  
ghUV] ]m[ fUd\ Zcf'cdYb'ghcdY'XYg][ b";` fWd Sf[a` S^<agd S^aXDaU] ? WUZS` [Ue ` ? [ [ Y  
EU[W UWe ' , ždd"+') -+( ( "Ł  
, " Gi cf]bYb]ž: "H"i &\$%\$ "H\Y'ghUV] ]m[ fUd\ UZ]f'h'fY'XYWUXYg]b'i gY. '9I dYf]YbW]g'UbX'hY'k Um  
Zcfk UfX";` fWd Sf[a` S^<agd S^aX? [ [ Yf DW]S\_ Sf[a` S` V 7` h[da` \_ W fžJc`"&(žBc"(ždd"  
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- " 6UYWYfž; "6"UbX'7\ f]gh]Ubž>"H"i &\$%) "F Y]UV] ]m]UbX'Gh]h]gh]W]g]b; YchYW]b]W]`9b[ ]bYYf]b[ "  
>c\b'K ]Ym/ 'Gcbgž@X"ž\*%- 'd"  
%\$ K ]YgžH" &\$%\$\* "F Y]UV] ]micZbi a Yf]W]a cXY`b[ 'dfYX]W]cbg";` fWd Sf[a` S^<agd S^aXDaU]  
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# 7 ci fgY'9j U'i Uh]cb'UbX'8Yj Y'cda Ybh

## H\Y'UggYgga YbhW]hYf]U

H\Y'UggYgga YbhW]hYf]U'dfcj ]XY'U'ZUa Yk cf\_ 'Zcf'mci 'hc'UggYgg'mci f'ck b'k cf\_ 'VY'ZcfY'Zcfa U'mgi Va ]h]b[ a U'cf'Ugg][ ba Ybh]hc'mci f'W'ci fgY'W'bj Ybcf" 'Mci f'W'ci fgY'W'bj Ybcf'k ]' 'VY' i g]b[ 'h]g'ZUa Yk cf\_ 'hc'UggYgg'mci f'k cf\_ 'UbX'Ug'U'k Umhc'UggYgg'k \YhYf'mci 'Uj Y'a Yh'hY' ]ghYX'YUfb]b[ 'ci h'W'a Yg'UbX'hY [ fUXi UH'UH]Vi H'g'Zcf'mci f'dfc[ fUa "K Y'Ug\_ 'h'Uhmci 'Xcb'hi gY'hY'UggYgga YbhW]hYf]U' [ i ]XY' ]bYg'Ug'U WXYW\_ ]gh'Z'Vi hUg'U'hc'hc'UggYgg'hY'ei U' ]m'cZmci f'k cf\_ " 'Mci f'W'ci fgY'W'bj Ybcf'k ]' 'Ugc'VY'cc\_]b[ 'Uh hY'ei U' ]m'Z'WYU]h] ]m'UbX'dfYgYbhU]cb'cZmci f'k f]hY'Ugg][ ba YbhUg'hYmfYj ]Yk 'hY'ZUa Yk cf\_ " 'F i Vf]W'Z k \YfYj Yf'Udd ]WV'Y'Zk ]' 'VY'dfcj ]XYX'Uh'hY'h'a Y'cZ'hY'Ugg][ ba Ybh'fY'UgY"

H\Y'Z'ck ]b[ 'UggYgga YbhW]hYf]U'dfcj ]XY'U'ZUa Yk cf\_ 'Zcf'gh XYbh'k \Yb'dfYdUf]b[ 'Ugg][ ba Ybh] ]b'hY'W'ci fgY'Ug'k Y''Ug'U' [ i ]XY' ]bY'Zcf'UggYgg'cf'g'k \Yb'a Uf\_]b[ 'Ub'Ugg][ ba Ybh'H\Y'gh XYbh]g'UX ]gYX'hc fYj ]Yk 'hY'fY'Yj UbhZUa Yk cf\_ 'VY'ZcfY' i bXYfU\_]b[ 'hY'f'Ugg][ ba Ybh'

H\Y'W]hYf]U'' ]ghYX'Zcf'YUW ]h'a 'cZUggYgga YbhUbX'hY'XYgW]dh]cbg'W'bhU]bYX'hY'fY]b'UfY'bch]bhYbXYX'hc VY'dfYgW]dh] Y'bcf' ]g' ]h'Ub'YI \Ui gh] Y'' ]gh'F'U'hYf' ]hg' \ci 'X'VY'j ]Yk YX'Ug'U'ZUa Yk cf\_ 'hc' [ i ]XY'hY'gh XYbhUg'hc'hY'hmdY'cZ]bZcfa Uh]cb'UbX'XYd'h'cZ'W'j YfU[ Y'hUh]g'YI dY'W'X'hc'VY'Yj ]XYbh]b'U gi Va ]gg]cb'Zcf'UggYgga Ybh'hY'ZUa Yk cf\_ ]'i gh'U'hY'g'Zcf'YI Ua d'Y'k \Uhk ci 'X'X]gh]b[ i ]g'Ub'YI W''Ybh UW]Yj Ya YbhZca 'U'dccf'UW]Yj Ya Ybh'

H\Y'gh XYbh]g' \ci 'X'VY'W' [ b]gUbh'hUhU'fUb[ Y'cZ'U'W'cf'g' ]g'cZ'h'VY]b[ 'UggYggYX' ]b'Ub'cbY'Ugg][ ba Ybh' bch'ghk \Yh'Yf'hY'Z]bU'fYgi 'hg'UfY'bi a Yf]W'm'W'ffY'W'i'7 cbg]XYfU]cb' ]g' [ ]j Yb'hc'ch'Y'f'fY'Yj Ubh Y'Ya Ybh]g'hUh'W'bh]Vi h'hc'hY'>Wsd [ Y A gfUa\_ W'cZ'hY'W'ci fgY'Ug'k Y''Ug'hY'9 dSVgSfW3ffdTgfW'cZ hY'c'j YfU''XY[ fY'f'cf' fUa "

FZWefgVW f[e USgf'a` W SYS[ ef\_ WdWk ge[ Y fZWSeeW'e\_ W f Ud'fW]S Se S UZWU] f'ef'Z'K \Yb'UggYgg]b[ Ub'Ugg][ ba Ybh'Z'Y'Ya Ybh] ]b'hY'ZUa Yk cf\_ 'k ]' 'VY'YI Ua ]bYX' ]b'hY'fa g'cZei U' ]m'UbX'W'YU]h] ]m' < YbW Ybgi f]b[ 'U''hY'' ]ghYX'Y'Ya Ybh]UfY'a YfY'm'W'j YfYX' ]b'Ub'Ugg][ ba Ybh]g'cZ'h' b'chgi Z]W'Ybh]b' ]hg'Y'ZUbX k ]' 'bchUi hca Uh]W'm'YUX'hc'Z' ''a Uf\_g'VY]b[ 'Uk UfYX''C'hYf'Z]W'cf'g'gi W'Ug'\ck 'hY'gh XYbhk Ybh UVci hdfYgYbh]b[ ]bZcfa Uh]cb'Z' \ck 'Ub'Uf[ i a Ybhk Ug'gh'f' W' fYX'UbX'cf'hY'Y'Ya Ybh]gi ddcf]b[ 'U dUf]W'Uf'fY'W'a a YbXUh]cb'cf'ci h'W'a Y'UfY'Ugc' ]a dcf]Ubh'

: ]bU'n'Z'hY'ZUa Yk cf\_ 'W]b'Ugc'VY' i gYX'hc'dfcj ]XY'Z'YXVUW\_ 'hc'U'gh XYbhcb'hY'f'dYfZcfa UbW' ]b'Ub Ugg][ ba Ybh'

## 5gg][ ba YbhUggYgga YbhW]hYf]U'




# 7 f]hY f]U

9EAWCKbfbh

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7f]Hf]U	9l W^Ybh	; ccX	GUhgZJWtcfm	l bgUhgZJWtcfm	Dccf	b]
	bc'gdY''b[ 'UbX [ fUa a Uh]VW^Yffcfg YHW					a U'cf]ggi Yg #bi a Yfci g'gdY''b[ UbX#cf [ fUa a Uf Yffcfg
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- I BGK '@YUfb]b[ '7YbfY! [k k k "Wi bgk "YXi "Ui](#)
- 7 ci bgY``b[ 'gi ddcfh! [k k k "Wti bgY``\]b\[ "i bgk "YXi "Ui](#)

9ei ]HUV`Y`@YUfb]b[ 'GYfj ]Wg

## 5 WUXYa ]W< cbYgmiUbX`D`U[ ]Uf]ga

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5`A`]b]b[`9b[ ]bYf]b[`gh`XYbñg`UfY`fYei`]fYX`hc`W`ca`d`Y`h`U`g`h`XYbñXYWñUf]h]cb`Zc`f`UWUXYa`]W]bñ[ ]f]m`k`\]W`]g`ci`h]bYX`]b`h`Y`Ugg][ ba YbñW`j`Yf`g`\Y`Y`h]"6`mg][ b]b[`h]g`XYWñUf]h]cb`ž`mci`U[`fY`h`U`h`mci`f`k`cf\_]g`mci`f`ck`b`cf][ ]bU`k`cf\_"

ž`mci`bYXX`gca`Y`UXX]h]cbU`gi`ddcf`h`]h`mci`f`k`f]h]b[`g\_]`gž`d`Y`UgY`W`cb`hUWñ`h`Y`@YUfb]b[`7`YbñY`cf`j`]Yk`gca`Y`cZ`h`Y`fYgci`fW`g`cb`h`Y]f`k`YVg]hY`[k`k`k`"Wi`bgk`"YXi`"Ui`"](#)H`Y`@YUfb]b[`7`YbñY`]g`XYg][ bYX`hc`\Y`d`mci`]a`dfcj`Y`mci`f`UWUXYa`]Wk`f]h]b[`UbX`W`ca`a`i`b]Wñ]h]cb`g\_]`g`"Gca`Y`g`h`XYbñg`i`gY`h`Y`7`YbñY`gYf] ]W`g`VYWñi`gY`h`Y`m`UfY`Z]bX]b[`h`Y]f`Ugg][ ba Ybñg`U`W`U`Y`b[`Y`ž`ch`Y`fg`VYWñi`gY`h`Y`mk`Ubñ`hc`]a`dfcj`Y`Ub`U`fY`UXm`gi`W`Y`ggž`UWUXYa`]WdYf`Zcfa`UbW`"

5 WUXYa ]W#Zcfa Uh]cb

7 ci fgY`F Ygi `hg

: cf`XYHU]g`cb`l BGK `UggYgga Ybhd`Wzd`YUgY`j ]g]h [k k k "gh XYbhi bgk "YXi "Ui #UggYgga Ybh](#)

#`gca Y`]bghUbWg`mci f`Z]bU`Wci fgY`fYgi `ha UmVY`k ]H\Y`X`UbX`bchfY`YUgYX`cb`hY`l BGK `d`UbbYX`XUH`" H\]g`]g`]bX]WUH`X`VmU`Wci fgY`[ fUXY`fYgi `hcZY]hYf.

- VfcUXVUbX`WcbbYWjcb`f&) \*`\_V]hgYWcf`ZJghYfŁ
- UV]`]mhc`j`Yk`ghfYUa`]b`[`j`XYc`fŁ][`\\`cf`ck`XYZ]b]hcb`I`BGK`HJ`cdh]cbgŁ

A cfY`]bZcfa`Uhcb`UVci`hgmgHya`fYei`JfYa`Ybhtg`]g`Uj`U]UV`Y  
[Uhi k k "ghi XYbhi bgk "YXi "Ui #a ccX`Y!gmghYa`lfYei`JfYa`Ybhtg](#)

## 5VWYgg]b[ `7ci fgY`A`UHf]U`g`H\fcI [ `A`ccX`Y`

7ci fgY`ci`h]bYgžgi`ddcfha`UHf]U`g`UFY`i`d`c`UXYX`hc`A`ccX`YžhY`i`b]j`Yfg]mghUbxUfX`@YUfb]b[  
 A`UbU[`Ya`YbhGmgHya`f@a`GŁ`#`UXX]hcbžcb!`]bY`Ugg][`ba`Ybhgi`Va`]gg]cbg`UFY`a`UXY`i`g]b[`hY`  
 Ugg][`ba`YbhXfcdVcl`ZUW]`]midfcj`]YX`]b`A`ccX`Y`"5`"Ybfc`"YX`gh`XYbhtg`UFY`Ui`hca`UH`W`"m]bW]`XYX`]b`  
 A`ccX`Y`Zcf`YUW`Wci`fgY`"Hc`UWVY`gg`hY`gY`XcW`a`Ybhtg`UbX`chYf`Wci`fgY`fYgci`fW`gžd`YUgY`j`]g]h`  
[k k k "a ccX`Y`"h`"hi`bgk`"YXi`"Ui`](#)

## <ck`K`Y`7`cbhUWh`Mci`

5hi]a`YgžhY`GW`cc`"cf`mci`f`Wci`fgY`Wcbj`Ybcfg`a`UmbYYX`hc`WcbhUWhmci`UVci`hmcI`f`Wci`fgY`cf`mci`f`  
 Ybfc`a`Ybh`Mci`f`Wci`fgY`Wcbj`Ybcfg`k`]"i`gY`hY`Ya`U]"Z`bW]cb`k`]h]b`A`ccX`Y`cf`k`Y`k`]"WcbhUWhmci`cb`  
 mci`f`4`gh`XYbhi`bgk`"YXi`"Ui`Ya`U]"UXXfYgg"

K`Y`i`bXYfghUbx`h`UhmcI`a`Um`Uj`Y`Ub`YI`]gh]b[`Ya`U]"UW`Wci`bhUbx`k`ci`X`dfYZf`Zcf`mci`f`I`BGK`Ya`U]"g`hc`  
 VY`fYX]fYWYX`hc`mci`f`dfYZf`fYX`UW`Wci`bh`D`YUgY`gYY`]bg]fi`W]cbg`cb`\\`ck`hc`fYX]fYW`mci`f`I`BGK`  
 Ya`U]"g`" "<ck`WUbi`#Zcfk`UfX`a`mYa`U]"g`hc`Ubc`hYf`UW`Wci`bfB"

## <ck`Mci`7`Ub`7`cbhUWh`I`g`

K`Y`UFY`U`k`Umg`fYUXmhc`Ugg]ghmci`k`]h`mci`f`]bei`]f]Yg`"Hc`Ybgi`fY`mci`f`ei`Ygh]cb`]g`X]fYWYX`hc`hY`Wc`ffYWh`  
 dYfgcbžd`YUgY`i`gY`hY`Ya`U]"UXXfYgg`VY`ck`Zcf.

- 9bfc`a`Ybhcf`chYf`UXa`]b`ei`Ygh]cbg`fY`[`UfX]b[`mci`f`dfc`[`fUa`.  
[\hdg`##`bgk`\]bg\]\[`h`a`\]wgcZ`Wfa`dcffU`g`Wca`#`YV!Zcfa`g#`](#)
- 7ci fgY`]bei`]f]Yg`g\`ci`X`VY`X]fYWYX`hc`hY`7`ci`fgY`7`cbj`Ybcf`

⇒ U[`Y`7`fYX]h`

⇒ U[`Y`Vm<`Ua`YX`@Ja`Y]`F`Ua`UbX]"`

7F`⇒`CG`

7F`⇒`CG`Dfcj`]XYf`7`cXY`.\$\$\$`-`,`;



5W\_bck`YX[ Ya YbhcZ'7ci bHfm

K Y`UW\_bck`YX[ Y`hY`6YXY[ U`dYcd`Y`k`c`UfY`hY`hfUX]hcbU`W`gfcX]Ubg`cZ`hY`UbXg`cb`k`\\W`I`BGK  
?Ybg]b[ hcb`Wla`di`g]g`cW`hYX"


