

Cf[Y`a i g]_']b'5a VYf[.'%("'GU]gcb'a]h]bhYfbUh]cbU`Yb'GhUfg'ghUfhYh'

9f`YVYb`G]Y`X]Y`%("`GU]gcb`XYf`5a VYf[Yf`Cf[Y`a i g]_fY]\Y. ?cghYb`cgY`?cbnYfhY`a]h`fYbca a]YfhYb`? \emptyset bgh`Yfb`UV`) "' \Rightarrow `] |b`XYf`GW\i`_]fW\Y"



5a VYf[z'8 Yi hgW `Ub X '! 8]Y `C f[Y`a i g]_ `]b `5a VYf[`\Uh`k]Y XYf GU]gcb `5a `) " * `] `& \$ &) VY[]bbh'X]Y `%(" '5i g[UVY `XYf '5a VYf[Yf Cf[Y`a i g]_fY]\ Y `]b `XYf `GW\ i `_]fW\ Y `5a VYf[" '8]Y `? cbnYfhfY]\ Y YfZfYi h'g]W\ [fc > Yf `6Y`]YVh\ Y]h'i b X `]gh'Y]b `ZYghYf `6YghUb XhY]`` XYf _i `hi fY``Yb `@Ub XgW\ UZh]b `XYf `F Y[]cb " '5b `YXYa `GUa ghU['i a '%& I \f'g]b X `X]Y `6Ygi W\ Yf `Y]b[Y`UXYb z']b `XYb ; Ybi gg'j cb " \$ A]bi hYb `k i b XYfgW\ ObYf `C f[Y`a i g]_ 'ni '_ca a Yb z'k A\ fYb X `X]Y < Y_h]_ `XYg `5``hU[g `ZØf Y]b Yb `_i fn Yb `5i [Yb V`]W_ ']b `J Yf[YggYb\ Y]h [YfAh" 8 Ug `Yf_`Afh `Ui W\ `XUg `A chhc `XYf `F Y]\ Y. `9]b Yb `5i [Yb V`]W_]bbYni \U`hYb `i b X `XYf `< Y_h]_ `XYg `5``hU[g 'ni `YbhZ]Y\ Yb `VY]'' \$ A]bi hYb `C f[Y`a i g]_ ']b `XYf `GW\ i `_]fW\ Y "

8]Y'5i ZhU_hj YfUbghU`hi b['k]fX'[Ubn'VYgcbXYfb.'5a 'YfghYb

GUa ghU['gd]Y`Yb'H\ca Ug'DfYW\h`i bX'5bbU'8cYf]b['Ui Z'nk Y] ?`Uf]bYhhYb'gck]Y'J]bnYbn'8cYf]b['Ub'XYf'Cf[Y`'K Yf_Y'[fc» Yf ?ca dcb]ghYb'k]Y'6UW\ž'A cnUfhž'8j c ½_ž'A Ub[Ub]'i bX'@YZÅVi fY! K Å`m"'8]Y'?cbnYfhfY]\Y'i a ZUggh']bg[YgUa h'%\JYfUbghU`hi b[Ybž X]Y'V]g'ni a '&\$"'GYdhYa VYf'ghUhhZ]bXYb"'5a VYf['\Uh'g]W\'ZØf'X]Y 9fÒZZbi b[gj YfUbghU`hi b['U`gc'Y]bYb'YW\hYb'@YW_YfV]ggYb [Y[Òbbh"

FYbca a]YfhY'? Øbgh`Yf'i bX'j]Y`ZÀ`h][Y Dfc[fUa a Y

 $8] Y ?? cbnYfhY `V] Y hY b `b] W h hbi f`Cf[Y`_`Ab[Yž gcbXYfb`Ui W `Y] b Y b V i bhY b`A] I `k Y] hY fY f`Gc`c] bghfi a Y bhY "`Gc`_ca a Y b`] a `@Ui ZY`XY f GU] gcb`i bhY f`Ub XY fY a `Ui W `nk Y] :: U[chhY`ni a `9] bg Uhnž `X] Y`X Ug GW `i gg_cbnYfh`VY fY] W Y fb`k Y fXY b "`8 Y f`9] bhf] hh`ni `U``Y b ? cbnYfhY b`] gh`ZfY] ž`X c W `X] Y`J Y fUb ghU`hY f`ZfY i Y b`g] W `ØVY f GdYb XY b "`8] Y gY`Z] Y » Y b`XY a `J Y fY] b` Dfc Y_h`Cf[Y``Gh"`A Ufh] b Y"J" `ni ž`XY f`g] W `XUZØ f`Y] bgY hnhž Y] bY`_`Ub[j c``Y`Cf[Y``ZØ f`X] Y [ch] gW Y`<U``Y b_] fW Y`Gh"`A Ufh] b`Ub ni gW UZZY b"$

 $\label{thm:continuous} J Y f U b g h U `h Y f `X Y f `F Y] \ Y `g] b X `X U g `? i `hi f f Y Z Y f U h `X Y f `G h U X h `5 a V Y f [ž X Y f `J Y f Y] b `D f c Y _h `C f [Y ``G h "`A U f h] b `g c k] Y `X] Y `D Z U f f Y] " `I b h Y f g h Ø h n h k] f X `X U g `; U b n Y `j c b `X Y f `J F ! 6 U b _ `5 a V Y f [! G i `n V U W `Y ; ž `X] Y `Y] b Y b k] W X h] [Y b `6 Y] h f U [`ni f :] b U b n] Y f i b [`[Y `Y] g h Y h `\ U h " K Y f `U `g c `Y h k U g Z Ø f `X] Y `? i `hi f `] b `5 a V Y f ['hi b `a Ò W h Y ž `] g h `\] Y f `[Y b U i `f] W X h] [°$

HYfa]bY XYf?cbnYfhfY]\Y

8 Uhi a	?Øbgh`Yf
) " ' ;	H\ca UgʻDfYW\h`žʻ5bbUʻ8cYf]b[
	fi? `Uf]bYhhYbŁž'J]bnYbn'8cYf]b[
	fCf[Y`Ł
%&"¨¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬	8f"'A Ufh]b'; fY[cf]i g
%- "`¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬	

&*"'>;`]	5 X f]½b F c Y f c '< Y f f Y f U
&" ⁵ i [i gh	DfcZ"A Ufh]b Ghi fa
- " ⁵ i [i gh	Fi VYbʻ≈∖UbbYgʻGhi fa
%* "`5i [i gh	5`VfYW\h'A UmYf'i bX'6Yfb\UfX
	A Ø``Yfg
&' " ⁵ i [i gh	G]a cb FU[Yf
' \$" ⁻ 5i [i gh	8ic'±bgd]fUWjïb
*" ⁻ GYdhYa VYf	DfcZ"GhYZUb~6U]Yf
%' "'GYdhYa VYf	DfcZ"?]fghYb'Ghi fa
&\$"`GYdhYa VYf	DUi `]bU'GhfYVY`i bX'&UbU
	HÀgVX bYf

 $: \emptyset f'k Y]hYfZ\emptyset \land fYbXY' + bZcfa Uh]cbYb'ni 'XYb'? cbnYfhYb'i bX'Y]bYa XYhU]``]YfhYb'Dfc[fUa a ZmYf'ghY \h'X]Y'K YVg]hY'k k k "Ua VYf[Yf! cf[Y`a i g]_"XY'VYfY]h"'8]Y'5a VYf[Yf'Cf[Y`a i g]_fY]\Y j Yfgdf]W\h'Ui W\']b'X]YgYa '\\J\f'k]YXYf'Y]b'YW\hYg' <][\`][\h'Z\Øf A i g]_`]YV\UVYf'i bX'gc`W\Yž'X]Y'Yg'k YfXYb'k c``Yb''$

: Øf ± hYfYgg]YfhYž'X]Y'[YfbY'X]Y'? `Ub[j]Y`ZU`h'j cb'Cf[Y`b']b
UbXYfYb'FY[]cbYb'YbhXYW_Yb'a ÒW hYbž'V]YhYh'Ui W 'XYf'
Cf[Y`hci f]ga i g'gdUbbYbXY'JYfUbghU`hi b[Yb'Ub"'8Yf'6Ygi W
Y]bYg'Cf[Y`_cbnYfhg']b'5a VYf['gc``hY'YXcW '[Ubn'cVYb'Ui Z'XYf@]ghY`ghY\Yb°

8 YhU]`g	
Cfh	5a VYf[ž'8Yi hgWX`UbX
EiY``Yb	k k k "a]hhY`VUmYf]gWXY"XY
	k k k "dfc 'Y_h!cf[Y`!gh!a Ufh]b"XY
	cf[Y`hcif]gaig"XY

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. 'bU[!VUmYfb"XY