

HUhhYfa i gWX 'k YWX gY`h'ni '7chhVi g.'>YbU j Yf`]Yfh'ghUf_Yb'GhØfa Yf°

7 Uf``NY]gg`\def bU'j Yf`]Yfh`GhØfa Yf`HYX`HUhhYfa i gW\`Ub 9bYf[]Y`7chhVi g"`8Yf`K YW\gY``gh\def_h`X]Y`C ZZYbg]j Y`XYg 8f]hh`][]ghYb"



>YbUž'8Yi hgWX`UbX'!'9]b'K YWXgY`ž'XYf'j]Y`Y': Ubg'ØVYffUgWXh
\Uh.'GhØfa Yf'HYX'HUhhYfa i gWX'j Yf`Àggh'XYb': 7'7Uf`'NY]gg'≯bU
i bX'gWX`]Y» h'g]WX'XYa :: 7'9bYf[]Y'7chhVi g'Ub"'8]Y'cZZ]n]Y``Y
6YghÀh][i b['_Ua 'Ua '8cbbYfghU[ž'XYa '%&"'¾b]ž'i bX'\Uh'VYfY]hg
ZØf'5i ZfY[i b['[Ygcf[h"'¾bU'a i gg'g]WX'bUWX'X]YgYa '5V[Ub['bi b
bYi 'cf]Ybh]YfYbž'k À\fYbX'7chhVi g'a]h'Zf]gWXYa 'K]bX']b'X]Y
bÀWXghY'GU]gcb'ghUfhYb'k]``"

g]Y\hi]b 'HUhhYfa i gW\'b]W\h'bi f'Y]bYb'; cU`[YhhYfž'gcbXYfb'Ui W\Y]bYb'Gd]Y`Yfž'XYf'X]Y'C ZZYbg]j Y'YbhgW\Y]XYbX'j YfghÀf_h'i bX'X]Y VYbÒh][hY'DfÀgYbn']b 'XYf'@ Zh'a]hVf]b[h''=b'gY]bYb'ZUgh'%\$\$
8f]hh`][U!9]bgÀhnYb'\Uh'Yf'VYfY]hg'9fZU\fi b['VY]a 'GJ'A YddYb'i bX
6cfi gg]U'8cfha i bXg'nk Y]hYf'A UbbgW\UZh'[YgUa a Y`hž'k Ug']\b'ni
Y]bYf'k Yfhj c``Yb'9f[Àbni b['ZØf'7chhVi g'a UW\h''

GhfUhY[]gWXY'JYfghÀf_ib['ZØf'7chhVig

A]h'XYb'bYi Yb'J YfdZ]Wk hi b[Yb'i bX'XYf'_`UfYb'N]Y`gYhni b['XØfZhY 7chhVi g'X]Y'5a V]h]cbYb'ZØf'X]Y'' "'@][U'bcWk'XYi h`]Wk'Ub\YVYb" 5_hi Y``ghY\Yb'g]Y']a 'J Yf['Y]Wk'ni 'UbXYfYb'HYUa g']a 'i bhYfYb 6YfY]Wk'XYf'; YgUa ha Uf_hk YfhYž'k Ug'X]Y'< YfUi gZcfXYfi b[Yb'ZØf X]Y'_ca a YbXY'GU]gcb'ni gÀhn`]Wk'j YfghÀf_h''K À\fYbX'9bYf[]Y 7chhVi g'VY]gd]Y`gk Y]gY'VY]'Y]bYa 'A Uf_hk Yfh'j cb'*ž)' 'A]``]cbYb 9i fc'fUb[]Yfhž'\UVYb'UbXYfY'7`i Vg'k]Y'XYf'%": 7'?Ò'b'=Z'a]h'ØVYf %*) 'A]``]cbYb'9i fcž'XYi h`]Wk'X]Y'BUgY'j cfb"'8Ug'a UWk'h'X]Y 5i Z[UVY'cfXYbh`]Wk'Ubgdfi Wkgj c``ž'UVYf'Ui Wk'gdUbbYbX'ZØf'X]Y: Ubg"

9]b 6`]W_]b X]Y Ni _i bZh

8]Y'' "@[[U']gh']b'6YkY[ib[žibX'a]h'XYa'KYWkgY`jcb HUhhYfaigWk'_ObbhY'g]Wk'X]Y'HUVY``Y'cfXYbh`]Wk'XifWka]gWkYb" 8]Y': Ubg'VY]XYf'JYfY]bY'kUfhYb'[YgdUbbh'UiZ'X]Y'YfghYb'Gd]Y`Yž ia'ni'gY\Ybž'k]Y'g]Wk'X]Y'bYiYb'Gd]Y`Yf'Y]bZØ[Yb'ibX'cV HUhhYfaigWk'XYb'Yf\cZZhYb'IbhYfgWk]YX'aUWkYb'_Ubb"'9]bYg']gh g]WkYf.'7chhVig']gh'VYfY]hž'X]Y'<YfUigZcfXYfib['UbnibY\aYb'ibX $: \varnothing f^* \not\Rightarrow bU^* \] b[Y[Yb^* Y] \Rightarrow h^* Y g \check{z}^* X] Y^* g d c f h^*] W Yb^* 6 Y k Y[i b[Yb Ui Za Yf_gUa 'ni 'VYc VUW hYb' i bX' j] Y^* Y] W h^* g Y^* V g h^* b UW Y^*] b Ya [YY][bYhYb' 9 f g Uhn' Z \varnothing f' XYb' h U^* Y b h] Y f hYb' G h Ø f a Yf' ni 'gi W Yb'' GW ^] Y \alpha Y f' ni 'gi W Yb'' GW ^] Y \alpha Yf' ni 'gi W Yb'' F \alpha W \alpha Y f' b A W \alpha Y b G U] g c b' _ Y] b Y' k Y] h Y f Y b F \alpha W _g W A [Y Y f^* Y] X Y b 'i b X 'k] Y X Y f' [Ubn' c V Y b' a] h g d] Y Y b'' 8] Y N Y] h k] f X 'n Y] [Y b Z' k] Y 'g] W X] Y '8] b [Y Y b h k] W _Y b' i b X 'k Y W Y , V Y f f U g W i b [Y b' X] Y 'b Y i Y 'G U] g c b' b c W 'V Y f Y] h \alpha `h'' \end{align*}$

K À\fYbX'X]Y: Ub`U[Yf'[YgdUbbh'Ui Z'X]Y'_ca a YbXY'GU]gcb k UfhYbž'V`Y]Vh'ni '\cZZYbž'XUgg'HUhhYfa i gW\'a]h'gY]bYf'bYi Yb A UbbgW\UZh']b'7chhVi g'Vf]``]YfYb'k]fX'i bX'XYf'gdUbbYbXY': i » VU`` ni fØW_']b'X]Y'GhUX]Yb'XYf'' "'@][U'_ca a h"'9]b'I a Vfi W\'ghY\h VYj cfž'XYf'XYb': i » VU```]b'XYf'FY[]cb'bYi 'VY`YVYb'_ÒbbhY"

: $\emptyset f k Y h Y f Y 8 Y h U j g n i f U h Y Y Y b ' " @ [U i b X X Y b H Y U a g ž W Y W Y b G] Y X] Y U h Y Y Y b A U f h K Y f h Y U i Z H f U b g Z Y f a U f h "$

6`Y]VYb'G]Y'XfUb'ZØf'k Y]hYfY'9bhk]W_`i b[Yb'fi bX'i a 'X]Y'JYfY]bY i bX'Gd]Y`Yf']b'XYf'bÀW\qhYb'NY]h"

±b`X]YgYa `G]bbYž'Ui Z'gdUbbYbXY`Gd]Y`Y`i bX`Y]bY`Ui ZfY[YbXYGU]gcb°

: Øf'k Y]hYfY' ±bZcfa Uh]cbYb'ni 'HYX'HUhhYfa i gW\'i bX'gY]bYa K YW\gY```YgYb'G]Y'a Y\f'VY]'H\Øf]b[Yb&('i bX'GUW\gYb"XY"

8 Y hU]`g	
Cfh	YbUž8Yi hgWX`UbX
EiY``Yb	• k k k "h\i Yf]b[Yb&("XY
	k k k "X]YgUWXgYb"XY
	k k k "hfUbgZYfa Uf_h"XY