

: `c_] '=bi '? fmd hck À\fi b[gUbnY][Ybk YfXYb']b'; fc» Vf]hUbb]Yb'i bhYfgi Wkh'

8]Y Vf]h]gWX Y K YfVYVY\ OfXY \ UhY]bY I bhYfgi WX i b['XYf K YfVi b['ZØf'X]Y '? fmd hck À\fi b['Zc_]']bi 'fl @C? \
Y]b[YY]hYh''8]Y 5bnY][Yb'a]hXYa 'H]hY'' J Yfa]gghYf'8c[Y3 ; Yh': `c_] ž'g]bX']b @cbXcbYf'6i ggYb'i bX'XYf'I !6U\b Ui Z[YhUi WXh''8 Ug'HYUa '\]bhYf'XYf'Zc_]!]bi!

K YfVY_Ua dU[bY'gU[hz'X]Y 5bnY][Yb'gY]Yb' fYWXh']WX
ZfY][Y[YVYb'i bX'X]Y 5_h]cb'XYf'K YfVYVY\ OfXY'gY]' Y]b

5b[f]ZZ'[Y[Yb'X]Y'? fmd hck À\fi b['i bX'[Y[Yb'X]Y K U\`ZfY]\Y]h'XYf'A YbgWXYb' 'Y]b'_`UfYf'J Yfgi WX'XYf
NYbgi f "'8]Y Vf]h]gWXY'K YfVYVY\ OfXY'i bhYfgi WX h'5bnY][Yb

ZØf': `c_]' \(\delta i '7 fmd hc W' ffYb Wm'8 \) Y 5Xj Yfh]g]b['GhUb XUfXg

5i h\cf]hm'f5G5\(\delta z X) Y'f]h]gWXY'K YfVYUi Zg]WX hgVY\ OfXYz
i bhYfgi WX h'5bnY][Ybz'X]Y']b' OZZYbh`]WXYb'J Yf_Y\fga]hhY`b']b

@cbXcb'ZØf'X]Y'? fmd hck À\fi b['Zc_]']bi 'fl @C? \(\delta d'Uhn)Yfh k YfXYb'': `c_] / Ua d\(\lambda Y'`)]d/

8]Y'Vf]h]gWXY'K YfVYVY\ÒfXY'i bhYfgi WXh 5bnY][Yb'ZØf': `c_]'=bi'7fmdhcW'ffYbWm

 $8]Y `5Xj Yfh]g]b[`GhUbXUfXg`5i h\cf]hm`f5G5Łž`X]Y `Vf]h]gWXY \\ K YfVYUi Zg]WX hgVY\OfXYž`i bhYfgi WXh`5bnY][Ybž`X]Y `]b `OZZYbh`]WXYb \\ J Yf_Y\fga]hhY`b `]b `@cbXcb `ZØf`X]Y `?fmdhck À\fi b[`Zc_]`]bi fl @C? <math>\pm$ 'd`Uhn]Yfh`k YfXYb"

: `c_]']bi ']gh'X]Y'?fmdhck À\fi b[\check{z} X]Y'bUW\'XYa 'G\]VU! \Rightarrow i!<ibX j cb'HYg`U!79C'9`cb'Aig_'VYbUbbh']gh"'Aig_'kifXY'8c[YZUh\Yf [YbUbbhž'kY]`'Yf'X]Y'AYaY!?fmdhck À\fi b['8c[YWc]b'fBC; 9Ł i bhYfghØhnhY"'9f'hk]hhYfhY'Ua'&)"' \Rightarrow b].' AY]b'G\]VU' \Rightarrow i 'k]fX': `c_]\Y]»Yb" '8Yf'HYg`U!7\YZ'Zc`[hY'Ua'%&"'GYdhYaVYf'a]h'Y]bYaHk YYhž']b'XYa'Yg'\]Y».' : `c_]']gh'Ub[Y_ca a Yb"' : @C? \Rightarrow \Uh gck c\`'Y]bYb'9F7&\$!Hc_Yb'U`g'Ui W\'Y]bYb'69D&\$!Hc_Yb"

 $8] Y `Zc_]!] bi !5bnY] [Yb `k i fXYb `] b `@cbXcbYf `6i ggYb `i bX `] b `I !6U \ b! GhUh] cbYb `[YgY \ Yb " \ 8] Y `5bnY] [Yb `Ybh \ U `hYb ` J Yfa] gghYf `8c[Y3 ; Yh `: `c_] `] b `[fc > Yfž `ZYhhYf `GW f] Zh "$

 $8 \ Ug'HYUa \ `\]bhYf'XYf'Zc_]!]bi!?fmdhc!K \ YfVY_Ua \ dU[\ bY'gU[\ hY \check{z}'X]Y \\ 5bnY][\ Yb'gY]Yb' \ fYWXh`]WX'ZfY][\ Y[\ YVYb \ "`G]Y'gU[\ hYb'XYf'667.$

8]YgY'5bnY][Yb'Ybh\U`hYb'Ui W\'Y]bYb'_`UfYb <UZhi b[gUi ggW\`i ggž'XYf'X]Y'Jc`Uh]`]hÀh'j cb

?fmdhck À\fi b[Yb'\Yfj cf\YVh"

K À\fYbX'HfUbgdcfh'Zcf'@cbXcb'fH: @Łž'XUg'JYf_Y\fgi bhYfbY\a YbXYf'<Ui dhghUXhž'gU[hYž'XUgg'Yg'_Y]bY'kY]h'j YfVfY]hYhYb66YgWkYfXYb'XYf'2ZZYbh`]W_Y]h'ØVYf'KYfVi b['ZØf?fmdhckÀ\fi b[Yb'[Y[YVYb'\UVYž'\UVYb'Y]b][Y'Dc`]h]_Yf']b;fc»Vf]hUbb]Yb'6YXYb_Yb'[YÀi »Yfhž'XUgg'X]Y'H: @'X]Y'5bnY][YbZØf'Zc_]']bi 'b]W\h'\ÀhhY'[YbY\a][Yb'gc``Yb"

8 Yf '6Øf[Yfa Y]ghYf 'XYg '@cbXcbYf '6Øfcg 'gU[hY. 'H: @'gWX fY]Vh 'UbX]Y '5G5 'i bX 'X]Y ':]bUbW]U` '7cbXi Wh '5i h\cf]hm 'fl 75Łž 'i a ']\fY 5bg]WX hYb 'ni 'XYb'[YÀi » YfhYb '6YXYb_Yb 'ni 'YfZfU[Yb" 'G]Ub6Yffmž 'A]h[`]YX 'XYf'; fYYb 'DUfhm '@cbXcb '5ggYa V`mž 'gU[hY 'XYa; i UfX]Ub.

8]Yg'\ÀhhY'Y]bY'fchY': U\bY'\YVYb'gc``Ybž'i bX'Ya UbX'VY] H: @\ÀhhY'g]W\'XUg'UbgY\Yb'gc``Ybž'VYj cf'Yg'[YbY\a][h kifXY"

. . .

8 UgʻHYUa '\]bhYfʻXYfʻZʻc_]ʻ]bi !K YfVY_Ua dU[bYʻhY]`hYʻXYfʻ667 ']b Y]bYfʻ9!A U]`ʻa]h

8 Yf 5 b [f]ZZ Y]b Yf V Ygh]a a hYb 'dc`]h]g W Yb 'D UfhY] 'Ui Z X]YgY 5 bnY][Yb ']gh Y]b '5 b [f]ZZ Ui Z X]Y '? fmd hck À\fi b ['i b X 'Ui Z X]Y 'K U\ 'ZfY]\Y]h 'X Yg 'J c`_Yg' 'Y]b '_`UfYf 'J Yfgi W 'X Yf NYbqi f"

=a 'Gca a Yf'j YfVch'X]Y '5G5'Y]bY'K YfVY_Ua dU[bY'ZØf'X]Y ?fmdhck À\fi b[gVÒfgY'@i bcž'X]Y'Ui Z'H: @``]YZ"'=b'XYf'5bnY][Y'\]Y» Yg. '9g']gh'NY]hz'6]hWc]b'ni '_Ui ZYb "

± Y]bYf'9f_`Àfi b['[Y[YbØVYf'XYf'667'gU[hY'X]Y'5G5ž'XUgg'g]Y g]WX'j YfgWX]YXYbY'? fmdhck À\fi b[gk YfVi b[Ybž'Y]bgWX`]Y»`]WX XYfYf'ZØf'Z'c_]']bi ž']b'' j YfgWX]YXYbYb'A YX]YbVYfY]WXYb ž'b]WXh bi f']b'H: @ž'UbgY\Y''' K]f'k YfXYb'dfØZYbž'cV'X]YgY'5bnY][Yb [Y[Yb'i bgYfY'FY[Y`b'j Yfghc» Ybž'i bX'i bgYfY'9f_Ybbhb]ggY bi hnYbž'i a 'i bgYfY'FY[i`]Yfi b[']b'X]YgYa '6YfY]WX'ni]bZcfa]YfYbž'Y]bgWX`]Y»`]WX'U``Yf': c`[Ya U»bU\a Yb'ni f 8i fWXgYhni b[ž'VYgWXf]YV'X]Y'6Y\ÒfXY"

 $K Ug `` U`hYb `G]Y 'j cb `XYf 'l bhYfgi WXi b[`XYf `5bnY][Yb `ZØf X]Y '? fmdhck À\fi b[`Z`c_]']bi `f! @C? <math>\pm 3$ `@UggYb `G]Y `Yg 'i bg]a `? ca a YbhUfVYfY]WX 'i bhYb 'k]ggYb"

6]`XbUWk Y]gY. G\i hhYfghcW_žD]l UVUmžK]_]'7ca a cbg

K Y hY fY VY YY WY B UWX f WX hY b

: U``g`8i 'Yg'j YfdUggh'\Ugh

.

fZ bWh]cbfXžgž]XŁoj Uf~gžZg·1 `X"[Yh9`Ya Ybhg6mHU[BUa YfgŁO\$Q/]ZfK"[Yh9`Ya Ybh6m=Xf]XŁŁfYhi fb/~g·1 `X"WfYUhY9`Ya YbhfgŁ/~g"]X·1]X/~g"gfWl~\hhdg.##\cbbYWh"ZUWYVcc_"bYh#YbSl G#gX_"~g, I ZVa `1 %/j Yfg]cb1j' "&~/Z~g"dUfYbhBcXY"]bgYfh6YZcfYflgžZ~gŁ/~qfXcWa YbhžfgWf]dhfz~fZUWYVcc_!~ggX_fŁŁ/