

9gʻ]ghi b_`UfžcV'JcmU[Yfʻ?fmdhcUggYhgʻUi ZʻXYfʻ; fi bX`U[Y j cbʻGdchdfY]gYbʻcXYfʻni _ØbZh][YbʻDfY]gVYfYW\bi b[Yb ni fØW_nU\`Ybʻk]fX' \(\forall \text{XYf'VY\Ui dhYhža} \)hʻG]W\Yf\Y]h'ni k]ggYbž'k]Yʻj]Y``JcmU[Yfʻni fØW_[Yk]bbYbʻ_UbbʻOZfca '' 57Q gdY_i`]Yfh žʻgU[hYʻFmUbʻ8U\``ni '6`cW_k cf_gʻJcmU[Yfʻ\Uh Ua 'A]hhk cW\`\digc`j Ybn'bUW\'7\UdhYfʻ%%'Ub[Ya Y`XYhži bX Ygʻ]ghi b[Yk]ggž'k]Yʻ; Yf]W\hYʻa]hʻVUb_fchhYbʻ?fmdhc!?fYX]h[YVYfb`k]YʻJcmU[Yfʻi bX`a O[`]W\YfkY]gYʻ7Y`g]i gi bX`6UVY`:]bUbW'ʻi a[Y\Ybʻk YfXYbʻ'6`cW_k cf_gʻgdfUW\a]hʻFmUbʻ8U\`žʻ6i g]bYggʻFYghfi Whi f]b[`DUfhbYfʻVY]`FcdYg / Ua d/, \$', /; fYmž'XUfØVYfž'k Ugʻ\digj YghcfYbʻYfk UfhYb_ObbYbž'k YbbʻJcmU[Yf`XUgʻ\digcj Ybnj YfZU\fYbʻVY[]bbh''6`cW_k cf_gʻJcmU[Yf`\Uh`Ua 'A]hhk cW\`\digcj Ybn'bUW\\7\UdhYf`%%'Ub[Ya Y`XYh''K Ugʻ_ca a h'/ Ua d\`Y``]d/

- 9g']gh'i b_`Ufž'cV'JcmU[Yf'?fmdhcUggYhg'Ui Z'XYf'; fi bX`U[Y j cb'GdchdfY]gYb'cXYf'ni _ØbZh][Yb'DfY]gVYfYW\bi b[Yb ni fØW_nU\`Yb'k]fX

JcmU[Yf`\Uh'Ua 'A]hhk cW\'=bgc`j Ybn'bUW\'7\UdhYf'%%
Ub[YaY`XYhž'i bX'Yg']gh'i b[Yk]ggž'k]Y'; Yf]W\hY'a]h'VUb_fchhYb?fmdhc!?fYX]h[YVYfb'k]Y'JcmU[Yf' 'i bX'a Ò[`]W\YfkY]gY'7Y`g]i gi bX'6UVY`:]bUbWY' ia[Y\Yb'kYfXYb"'

6`cW_k cf_g`gdfUW\`a]h`FmUb`8U\`ž'6i g]bYgg`FYghfi Whi f]b[
DUfhbYf`VY]`FcdYg'/ ; fYmž`XUfØVYfž'k Ug`±j YghcfYb`Yfk UfhYb
_`ObbYbž'k Ybb`JcmU[Yf`XUg`±)gc`j Ybnj YfZU\fYb`VY[]bbh"

6`cW_k cf_g. J cmU[Yf'\Uh'Ua 'A]hhk cW\ '=bgc`j Ybn'bUW\ 7\UdhYf'%%'Ub[Ya Y`XYh"'K Ug'_ca a h'U`g'bÀW\ghYg3

GcVU`X`XUg`; Yf]W\h`X]Y`9f_`Àfi b[`[YbY\a][h`\Uhž`_ObbYb`X]Y
; `Ài V][Yf`Gh]a a nYhhY``Y]bfY]W\Ybž`]b`XYbYb`g]Y`Ub[YVYbž`cV`g]Y
XYb`FYcf[Ub]gUh]cbgd`Ub`[YbY\a][Yb`cXYf`UV`Y\bYb"`9g`]gh
k U\fgW\Y]b`]W\ž`UVYf`b]W\h`g]W\Yfž`XUgg`Y]bY`FY]\Y`j cb
; `Ài V][Yfb`]b`XUg`\gc`j Ybnj YfZU\fYb`j Yfk]W_Y`h`gY]b`k YfXYbž
]bXYa `g]Y`]\fY`5bg]W\hYb`ØVYf`X]Y`9]bfY]W\i b[`_i bXhi b`
Y]bgW\`]Y»`]W\`XYf`6Y\Ui dhi b[`j cb`J cmU[Yfž: 8=7!j Yfg]W\Yfh`ni
gY]bž'k Ug`Ua `9bXY`dUgg]Yfh`]ghž`VYj cf`J cmU[Yf`\\\\gc`j Ybn
Ub[Ya Y`XYh\\Uhži bX`k]Y`j]Y``J cmU[Yf`V]YhYh`gY]bY; `Ài V][Yf"

6`cW_k cf_g. K Ufi a '_ÒbbhYb'; `Ài V][Yf'XYa j cf[YgW\`U[YbYb FØW_nU\`i b[gd`Ub'j cb'J cmU[Yf k]XYfgdfYW\Yb3

8 U\`. '8 Yf'K Yfhž'XYb'J cmU[Yf'U``X]YgYb'A YbgW\Yb'ni '[YVYb j cfgW\`A[hž'\Ab[h'XUj cb'UVž'k]Y'G]Y'X]YgY'? fmdhck A\fi b[Yb VYk YfhYbž'XYbb'g]Y'j YfgdfYW\Ybž'X]Y'j cb'XYb'? cbhc]b\UVYfb [Y[YVYbY'? fmdhc'ni fØW_ni [YVYb"'9g']gh'_ca d`]n]Yfhž'k Ybb'G]Y Y]bYb'J Yfa O[Ybgk Yfh'VYk YfhYbž'XYf'X]Y'YI hfYa Y'J c`Uh]`]hAhij cb? fmdhc'Ui Zk Y]ghž'i bX'Yg'[]Vh'_Y]b'YhUV`]YfhYg'F YW\hgk Yf_'ZØf'X]Y U_nYdh]YfhY'6Yk Yfhi b[gdfUl]g'ZØf'? fmdhc'''GW\Ui Yb'G]Y'g]W\'X]Y? fmdhc!GdchdfY]gY'Ub'cXYf'a UW\Yb'G]Y'XUgž'k Ug'ni a '6Y]gd]Y`']a 9bYf[]YVYfY]W\'[YhUb'k]fX'''k c'*bgc'j Ybn[Yf]W\hY'_ca d`]n]YfhY DfcnYggY'Xi fW\ZØ\fYbž'i a 'X]Y'ni _ØbZh][Yb'² `dfY]gY'ni i bhYfgi W\Yb3'K]f\UVYb'Ui W\'X]Y'6Yk Yfhi b['j cb'J cmU[Yf'bcW\b]W\h'[YgY\Ybž'X]Y'bcfa U`Yfk Y]gY']b'XYf'CZZYb`Y[i b[gYf_`Afi b[Ybh\U`hYb']gh"

6`cW_k cf_g. '9]b': U_hcfž'XYf'X]Y'FØW_nU\`i b[gZÀ\][_Y]h
j cb'J cmU[Yf'VYY]bZ`i ggYb'k]fXž']ghž'k]Y'j]Y`'j cb'gY]bYa
*) \$!A]``]cbYb!8c``Uf!8Uf`Y\Yb'Ub'H\fYY'5ffck g'7Ud]hU`
ni fØW_[YZcfXYfh'k YfXYb'_Ubb"'K Ug'_ÒbbYb'; `Ài V][Yf'j cb
XYf'?fYX]hVY]hfY]Vi b['j cb'J cmU[Yf'Yfk UfhYb3

8U\`. '8Yf': U```kifXY'[YfUXY'Y]b[YfY]W\hž'U`gc'kYfXYb'k]f'Ygb]W\h'k]f_`]W\k]ggYbž'V]g'g]W\XYf'GhUiV'[Y`Y[h'\Uh''\XXYfž'XYfVY\UidhYhž'g]W\Yf'nik]ggYbž'k]Y'j]Y``JcmU[Yf'nifØW_[Yk]bbYb_Ubbž'gdY_i`]Yfh''8]Y'K]YXYf\YfghY``ib[gfUhYb'VY]'X]YgYb'5fhYb

j cb 'A U» bU\a Yb '_ObbYb 'ghUf_'j Uf]]YfYb"'=a ': U```6Yfb]Y 'A UXcZZ ni a '6Y]gd]Y`'k Uf'X]Y '[Ab[][Y 'A Y]bi b[ž'XUgg 'Yg'b]Ya U`g'Y]bY k]f_`]WX Y '9f\c`i b['[YVYb 'k ØfXY"'HUhgÀW.`]WX 'k Uf'XYf'A UXcZZ Hfi gh'n]Ya `]WX 'YZZY_h]j 'XUf]bž'Y]bYb'; fc» hY]`'XYg'; Y`XYg'gY]bYf; `Ai V][Yf'ni fØW_ni [Yk]bbYbž']bXYa 'Yf'Y]bY'gY\f'YfZc`[fY]WXY DfcnYggghfUhY[]Y'j YfZc`[hYž'cVk c\``gY]b'9fZc`['bi f'VY]'XYf FØW_[Yk]bbi b['j cb'J Yfa O[Ybgk YfhYb']b'Y]bYa 'Dcbn]!GmghYa VYghUbXž'gc'XUgg'X]YgY`VY'FYWX hgh\Ycf]Y'X]Yg'b]WX h'hi h'\]Yf VYk YfVYb"

FmUb '8 U\`]gh DUfhb Yf]b 'XYf '6 i g]b Ygg F Yghfi Whi f]b['; fci d'j cb Fcd Yg'/'; fYm'a]h '9fZU\fi b[']b 'XYf 'J YfhfYhi b[' OZZYbh`]W\Yf i bX df]j UhYf 'GW\i `XbYf z'bch`Y]XYbXYf '=bj YghcfYb 'i bX :]b UbngdcbgcfYb ']b 'GcbXYfg]hi Uh]cbYb z'Ui » Yf[Yf]W\h`]W\Yb F Yghfi _hi f]Yfi b[Yb 'i bX 'bch`Y]XYbXYb', VYfbU\a Yb 'gck]Y [Yf]W\h`]W\Yb' 7\UdhYf!%%!DfcnYggYb 'Xi fW\'j cf[YZYfh][hYz'j cfUV UffUb[]YfhY'i bX'hfUX]h]cbY``Y'I a ghfi _hi f]Yfi b[Yb"

?ca a YbhUfY`k i fXYb`Ui g`; fØbXYb`XYf`?`Uf\Y]h'i bX`?ØfnY VYUfVY]hYh"

 $\label{eq:condition} $$ < c `Yb `G]Y `g]WX `^YXYb `5 VYb X `X]Y `VYghYb `? fmd hc! $$ B Yi][_Y]hYb `i b X `9f_Ybb hb]ggY `XYg `HU[Yg `]b `=\ fYb Dc ghY]b[Ub["`"$

HY'dcgh'E/5. FYghfi Whi f]b['9| dYfh'HU`_g'JcmU[Yf'6Ub_fi dhWm]gh'_Y]bY'Z]bUbn]Y``Y'6YfUhi b["

|8 Y hU]`g

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. '_fmd hc!b Yk g"Uh