

FcVYfh'8Y'B]fc'ghY\h'ghc`n'ni 'HcW\hYf 5]fmb.''=\W\'`]YVY'g]Y'VYX]b[ib[g`cg°

FcVYfh'8 Y'B]fc'i bhYfghØhnh'gY]bY'hfUbg'HcW\hYf'5]fmb \check{z} 'X]Y \emptyset VYf']\f'7ca]b[!ci h'gdf]W\h'i bX']\fY'9fZU\fi b[Yb'hY]`h"



8 Yi hgWX`UbX`!`FcVYfh'8Y`B]fcž'XYf', %!^À\f][Y'<c``mk ccX!GhUfž\Uh'g]WX`_`Uf'i bX'i ba]ggj YfghÀbX`]WX`ZØf'gY]bY`HcWX.hYf'5]fmb`8YB]fc`Y]b[YgYhnhž'X]Y`g]WX`U`g'hfUbg'[Yci hYh'\Uh'' +b`Y]bYfdYfgÒb`]WXYb'9f_`Àfi b['Ài »Yfh'8Y`B]fcž'XUgg'ZØf']\b'X]Y`@]YVY`nigY]bYb'?]bXYfbž'i bUV\Àb[]['j cb'XYfYb'9bhgWXY]Xi b['VYnØ[`]WX;YgWX`YWX.hg]XYbh]hÀhž']a a Yf']a 'JcfXYf[fi bX'ghY\h''9f'j YfghY\hb]WXhž'k Ufi a 'XUg'7ca]b[!ci h'gY]bYf'HcWX.hYf'gc'j]Y``5i ZgY\YbYffY[h'i bX'VYhcbh' +WX'`]YVY'i bX'i bhYfghØhnY'5]fmb'U`g'a Y]bYHcWX.hYf"'+WX'kY]»'b]WXhž'k Ug'XUg'[fc»Y'DfcV`Ya']gh '+WX'`]YVYU'`Y'a Y]bYY?]bXYf' VYf]WX.hYh'X]Y`FYa gnY]hi b["

5]fmb 8 Y B]fc ž &- '\lambda \fY 'U \h'i b X 'Y]b Yg j cb F c V Y fh 8 Y B]fc g 'g]Y V Y b ?]b X Y fb 'a]h X Y f GW Ui gd]Y `Y f]b 'Hci _]Y 'Ga]h \ ž \ Uh '_Øfn \]W ']b

Y]bYa → hYfj]Yk a]hXYa A U[Un]b H\Ya OVYf]\fY 9fZU\fib[YbkÀ\fYbX]\fYfHfUbg]h]cb [YgdfcWXYb"8Uni [Y\ÒfhXYfdfA[YbXY]bhYfgWX]YXnk]gWXYb g]WXhVUfni gY]b i bX k]f_`]WX [YgY\Yb nikYfXYb"G]Y fYZY_h]YfhY ØVYf]\fY → [YbXžU`g`g]Y j cb; `Y]WXU`hf][Yb j YfgdchhYhi bX Ui g[Y[fYbnhik i fXYžk Ug`g]Ya ch]j]YfhYž]a j Yf[Ub[YbYbBcjYa VYfa]hY]bYf
cfa cbh\YfUd]Y ni VY[]bbYbž]bgd]f]Yfhj cb UbXYfYb hfUbg
: fUi YbžX]Y]\fYbK Y[YfZc`[fY]WX [Y[Ub[Yb'g]bX"]

DYfgÒb`]WXY'9fZU\fib[Yb'ibX'lbhYfghØhnib[

Ni gàhn`]W\ 'Yf\]Y`h'5]fmb'j]Y`'dcg]h]j Y'FYgcbUbn'i bX
I bhYfghØhni b['Ui g'XYf'@, $6H \neq \tilde{Z}$!; Ya Y]bgW\ UZhž'Y]bgW\`]Y\\ ']W\ Y]bYf'BUW\f]W\ h'j cb'@Uj YfbY'7cl ž'X]Y'g]Y'ni ']\fYb
\[
\dig gd]fUh]cbgei Y``Yb'n\\ 'h''5]fmb'hY]`hY'X]YgY'BUW\f]W\ h'Ui Z
\[
\dig ghU[fUa 'i bX'VYnY]W\ bYhY'g]W\ 'gY`Vgh'U`g' Y]b'Y]bZUW\ Yg
A \(\frac{A}{X}\W\ Yb'a\)]h'Y]bYa '< UbXm ž'k Ug']\ fY'VYgW\ Y]XYbY'< U`hi b[i bhYfghfY]W\ h''\dig f'K i bgW\ ž'[Y\\Ofhii bX'U_nYdh]Yfh'ni 'k YfXYbž
\[
V\ObXY\`h'g]W\ ']b']\ fYf'6c hgW\ UZhž'XUgg'Yg'k]W\ h][']ghž'Z\Of X]Y'Y][YbY
\[
\dig Ybh]h\(\hat{A}h'Y]bni ghY\Yb'i bX'g]W\ h\Uf'ni 'k YfXYb'j Yfa]hhY`h'X]Y
\[
FYa gnY]hi b['k Y]hYf''

$; YgY^gWX UZh^gWX Yf^gcbhYIh$

8 Ugʻ9b[U[Ya YbhʻZØfʻX]YʻFYWXhYʻj cbʻHfUbg[YbXYf!ʻi bXʻb]WXh! V]bÀfYbʻDYfgcbYbʻk]fXʻb]WXhʻbi fʻj cbʻdfca]bYbhYb DYfgÒbʻ]WX_Y]hYbʻk]Yʻ8 YʻB]fcʻi bhYfghØhnhžʻgcbXYfbʻUi WXʻj cb GhUUhYbʻk Y`hk Y]h''8 Yi hgWX`UbXʻgYhnhʻg]WX`U_h]jʻgY]hʻ&\$%*ʻ]bʻXYf gc[YbUbbhYbʻ9ei U``F][\hgʻ7cU`]h]cbʻZØfʻX]YʻA YbgWXYbfYWXhYʻj cb@YgVYbžʻGWXki `Ybžʻ6]gYI i Y``Ybʻi bXʻhfUbg!ʻgck]Y

] bhYf[YgW\`YW\h`]W\Yb`AYbgW\Yb`Y]b"\8]Y\7cU`]h]cb\`VYghY\h\Uig (&'GhUUhYb'ibX'ghfYVh'X]Y'GhÀf_ib['XYf'FYW\hY'X]YgYf'; fiddYb Ub\`VYf]W\hYh'XUg'6A N"

 $= \text{TU} \text{ a Yb']} \text{ fYf'; } + \text{!DfAg]} \text{XYbhgWWUZh'} \text{ Uh'8 Yi hgWW'UbX']a } \text{ !J} \text{ !} \text{ !A XWYb'; } + \text{!DfAg]} \text{ YWWhYf'VY_fAZh][h'i bX'XYf'; } + \text{!Yf]} \text{ Yh'X]} \text{ 'Y' ['Y]} \text{ WW YfYWWh][hY'HY]'} \text{ UVY'j cb': fUi Ybz'A AXWWYb} \text{ gck]Y'@G6H& Z'!DYfgcbYb']b'j YfgWW]YXYbYb'@YVYbgVYfY]} \text{ WYb': c_i g''6YgcbXYfg'X]Y'<YfUi gZcfXYfi b[Ybz'X]Y'hfUbg[YbXYfDYfgcbYb'Xi fWW'X]Y'7cj]X!%-!DUbXYa]Y'YfZU\fYb'\UVYbz'k i fXYbh\YaUh]g]Yfhz'XUfi bhYf'gcn]U'Y'5i g[fYbni b['i bX'8]g_f]a]b]Yfi b[''Gc'WWY'['cVU'Yb'6Ya@\i b[Yb'ni f'JYfVYggYfi b['XYf'G]hi Uh]cbjcb'@6H& Z'!AYbgWWYb'nY][Yb'g]WW'Ui WW']b'XYb'6Y_Ybbhb]ggYbXYf'; + ni f'6Y_AadZb['jcb'; YkU'hii bX'8]g_f]a]b]Yfi b['gcXc_i a Ybh]Yfh'XUg'6AN''$

8 Y hU]`g	
Cfh	8 Yi hgWX`Ub X
EiY``Yb	• k k k "fYa gnY]hi b["XY
	• k k k "h\ Ya "i g
	• k k k "Va n"XY

6Ygi WXYb G]Y i bg Ui Z b!U["XY