

GWX k YfYf'l bZU``'Ua '? Uf`gd`Uhn. FUXZU\fYf]b'j Yf`Yhnh'g]W\'VY]'?c``]g]cb

FUXZU\fYf]b]b A Ubb\Y]a VY] I bZU```Ua ?Uf`gd`Uhn`gW\k Yf j Yf`Yhnh" FYhhi b[gX]Ybghij cf'Cfh``Y]ghYhY '9fghY' <]`ZY"

A Ubb\Y]a 'k Uf'Ua 'GcbbhU['GW\Ui d`Uhn'Y]bYg'gW\k YfYb'I bZU``gž XYf'UVYfa U`g'X]Y'; YZU\fYb']a 'GhfU» Ybj Yf_Y\f'j YfXYi h`]W\h"'?i fn j cf'%%'I \f'_c``]X]YfhY'Y]bY'(*!'À\f][Y'5i hcZU\fYf]b'a]h'Y]bYf FUXZU\fYf]bž'YVYbZU``g'(*'\\\fY'U`hž'U`g'g]Y'XYb'F\Y]bUi Yf'F]b[Ybh`Ub[Z\f"

 $8 \ Ug`i b[``\emptyset W_'YfY][bYhY`g]WX``Ua``?fY]gj`Yf_Y\f`Ua``?Uf`gd`Uhn"`8]Y\\ 5 i hcZU\fYf]bž`X]Y`]b`Y]bYa``G_cXU`i bhYfk Y[g`k Ufž`_cbnYbhf]YfhY\\ g]WX`k Å\fYbX`XYf`: U\fh`Ui Z`XYb`j cb```]b_g`_ca`a YbXYb`J Yf_Y\fibX``ØVYfgU\`XUVY]`X]Y`FUXZU\fYf]bž`X]Y`g]WX`Ui Z`XYa``FUXk Y[VYZUbX`i bX`[YfUXY`XUVY]`k Ufž`X]Y`GhfU»Y`ni `ei YfYb"`8]YgYIbUWX hgUa_Y]h`ZØ\fhY`ni f`?c```]g]cbž`VY]`XYf`X]Y`FUXZU\fYf]b`a]h[fc»Yf`K i WXh`[Y[Yb`X]Y`K]bXgWXi hngWXY]VY`XYg`: U\fnYi [gdfU``hY''8Yf5i ZdfU```k Uf`gc`\YZh][ž`XUgg`g]Y`ni `6cXYb`ghØfnhY''$

GWk YfY J Yf`Yhni b[Yb i bX gWkbY``Y <]`ZY

8]Y'(*!'À\f][Y'FUXZU\fYf]b'nc['g]W\'VY]'XYa 'JcfZU``'gW\k YfY JYf`Yhni b[Yb'ni "'8Yf`FYhhi b[gX]Ybgh'k Uf`gW\bY``'ni f`GhY``Y'i bX _Øa a YfhY'g]W\'i a 'X]Y'Yfgha YX]n]b]gW\Y'JYfgcf[i b['XYf JYf`YhnhYb"'Hfchn']\fYf`cZZYbg]W\h`]W\Yb'JYf`Yhni b[Yb'k Uf'X]Y : fUi 'YbhgW\`cggYbž'g]W\'gY`Vghgh\bX][']b'\Afnh`]W\Y'6Y\UbX`i b['ni VY[YVYb"'G]Y'k i fXY']b'Y]bY'?`]b]_'[YVfUW\hž'k c'g]Y']bhYbg]j VYhfYi h'k YfXYb'_cbbhY"

±bnk]gWXYb′kifXY′XUg′: U\fnYi[ž′XUg′]b′XYb′IbZU``´jYfk]W_Y`h

 $\label{lem:continuous} $$k\ Uf\check{z}'UV[\ YgW\&`Yddh":8]Y`Dc`]nY]`gW\&\&hnh`XYb`;\ YgUa\ hgW\&UXYb`Ui\ ZYbYb`b]YXf][\ Yb'j\]YfghY``][\ Yb'6YhfU[\ "`I a `X]Y`I bZU``Ui\ ZbU\a Y cfXbi b[\ g[\ Ya \ \&`Xi fW\&ni ZØ\fYbž`k Uf`Yg`bOh][\ ž`X]Y`: U\fVU\b j cfØVYf[\ Y\YbX`ni `gdYffYbž`k Ug`ni `k Y]hYfYb`6YY]bhf\&W\&h][\ i b[\ Yb]a `J Yf_Y\f`ZØ\fhY"$

8 Yf'J cfZU```\YVh'YfbYi h'X]Y'6YXYi hi b['j cb'5WkhgUa _Y]h']a GhfU» Ybj Yf_Y\f'\Yfj cfž'b]Wkh'bi f'ZØf'5i hc ZU\fYfž'gcbXYfb'Ui Wk ZØf'F UXZU\fYfž'X]Y'c Zh']a 'B UWkhY]`'g]bX"'9g']gh'Y]b'[YZÀ\f`]WkYg Ni gUa a Ybgd]Y``XYf'J Yf_Y\fghY]`bY\a Yfž'XUg'c Zh'ZUhU`Y': c`[Yb\UVYb'_Ubbž'k Ybb'X]Y'5i Za Yf_gUa _Y]h'b]Wkh'Ui Z'U``Y'6YhY]`][hYb[Yf]WkhYh']gh"

±b 'XYf 'GhUXh'A Ubb\Y]a ž'X]Y 'g]W\'ni bY\a YbX'i a 'X]Y 'G]W\Yf\Y]h]a 'F UXj Yf_Y\f'VYa Ø\hž'nY][h'X]YgYg '9fY][b]gž'XUgg 'hfchn'U``Yf A U» bU\a Yb 'X]Y '; YZU\fYb ']a 'GhfU» Ybj Yf_Y\f'b]W\h'j c``ghÀbX][Y`]a]b]Yfh'k YfXYb'_ÒbbYb"'J YfUbhk cfhi b['i bX'5i Za Yf_gUa _Y]h g]bX'X]Y 'GW\`ØggY`ž'i a 'gc`W\Y'J Yf`Yhni b[Yb']b'Ni _i bZh'ni j Yfa Y]XYb"

8]Y'[YbUi Yb'l a ghÀbXY'XYg'JcfZU``g'k YfXYb'k Y]hYf\]b'j cb'XYf
Dc`]nY]'i bhYfgi W\hž'i a '?`Uf\Y]h'ØVYf'XYb'l bZU``\Yf[Ub['ni
gW\UZZYb'i bX'[Y[YVYbYbZU``g'A U» bU\a Yb'ni f'JYfVYggYfi b['XYf
JYf_Y\fgq]W\Yf\Y]h'ni 'VYk YfhYb"

8 Y hU]`a

6 Y qi W Y b 'G | Y 'i b q 'U i Z 'b ! U ["X Y