GUfUgchU'5hhcfbYm'8]gVUffYX.'G\cW_]b[H\YZh'cZ'CjYf''%'A]``]cb'FYjYU`YX°

91 d`cfY`h\Y`fYWYbh`X]gW]d`]bUfm`UWh]cbg`U[U]bgh`UhhcfbYmg`]b8YGchc`7cibhmžfYjYU`]b[`g][b]Z]WUbh`a]gWcbXiWh`UbXUW\cibhUV]`]hm`aYUgifYg"



5 WWcfX]b['hc' < YfU'X'Hf]Vi bYž'GW\`chh\Ui Yfg'X]gVUfa Ybhž YZZYWh]jY']a a YX]UhY`m'Zc``ck]b['U'> bY'&*'cfXYfž'ghYa g'Zfca $\label{thm:condition} $$U^*Y[Uh]cbg^*Z]^*YX^*Vm^*h^Y^*: `cf]XU^*6Uf^*h^Uh^*Y^*i b`Uk Zi ``m^*X]j YfhYX^*Uh `YUgh^* %z$* %z(-- 'Zfca 'hk c'hfi ghg'' <]g'WUgY']g'dUfh]W'`Uf`m ghf]_]b[z^*Ya V^Ya Uh]WcZ^*U^*hfci V`]b['hfYbX^*Ug'h^Y'bi a VYf'cZ X]gW]d`]bYX^*UhhcfbYmg'[fck g'UWfcgg'h^Y'fY[]cb''G]bW'^&$&$z^*Z]j Y`Uk mYfg'k]h^]b'h^Y'W]fW']h^^Uj Y'ZUWYX^*X]gVUfa Ybhz'k ^]`Y'a Ubm ch^Yfg'UfY'W' ffYbh`m']bY`][]V`Y'hc'dfUWh]WY'`Uk "$

8]gW]d`]bUfm'@UbXgWUdY']b'h\Y'HkY`Zh\7]fW||

H\Y'X]gW]d`]bUfm``UbXgWUdY`]b`h\Y'HkY`Zh\'\$X]W]U``7]fW']hžk\]W\
]bWi XYg`GUfUgchUž`A UbUhYYž`UbX`8YGchc`Wci bh]Ygž`fYZYWhg`U
ghYfb`WU```Zcf`UWWci bhUV]`]hm''`#b`hchU`ž`UWh]cbg`\Uj Y`]bWi XYX
j Uf]ci g`gUbWh]cbg`gi W\`Ug`gi gdYbg]cbgž'di V`]WfYdf]a UbXgž`UbX
Yj Yb`dfcVUh]cbUfm`a YUgi fYg"`GdYW]Z]WU``mž`cZ'h\Y'%- `UhhcfbYmg
X]gW]d`]bYXž`%%`UfY`bck ii bUV`Y`hc`dfUWh]WY``Uk`]b`: `cf]XUž`k\]`Y
cb`m`Y][\h`fYhU]b`h\Y]f`[ccX`ghUbX]b["'H\Y'fUb[Y`cZ`gUbWh]cbg
]bX]WUhYg`h\Uh`h\Y': `cf]XU`6Uf`UbX`h\Y'Gi dfYa Y'7ci fh`UfY`j][]`Ubh
]b`fYgdcbX]b[`hc`a]gWcbXi Wh`Ua cb[`h\Y`ghUhY g``Y[U`
dfUWh]h]cbYfg"

 $H\Y'Z\ ````]gh'cZ'X]gW]d`]bYX'UhhcfbYmg'dU]bhg'U'j\]j\]X'd]Whi\ fY'cZ'h\Y W\U``Yb[Yg'k]h\]b'h\Y'dfcZYgg]cb.$

B Ua Y	8]gW]d`]bUfm'5Wh]cb	GhUhi g
K]``]Ua 'GW\`chh\Ui Yf	8]gVUffYX	Bch'Y`][]V`Y'hc
		dfUWh]WY
DUa Y`U'H\YfYgY	DYfa UbYbh	Bch'Y`][]V`Y'hc
7U`XYfcb	FYjcWUh]cb	dfUWh]WY
H\ca Ugʻ5fh\i f	8]gVUffYX	Bch'Y`][]V`Y'hc
7\UbX`Yf		dfUWh]WY
≯JW_'K]``]Ua 'A Yff]hh	5Xa cb]g\a Ybh	A Ya VYf]b [ccX
		ghUbX]b[
A Uf_'8"'G]Y[Y`	8]gVUffYX	Bch'Y`][]V`Y'hc
		dfUWh]WY
FcbU`X'K "'7\Uda Ub	G7 ⁻ 8]j Yfg]cb	A Ya VYf]b [ccX
		ghUbX]b[
HUfmU'5fbg\Y`]W	Di V`]WFYdf]a UbX	A Ya VYfʻ]bʻ[ccX

Hf]VV`Y		ghUbX]b[
8]UbY∵£m' <uff]gcb< td=""><td>8]gW]d`]bY</td><td>B c h 'Y `][]V `Y 'hc</td></uff]gcb<>	8]gW]d`]bY	B c h 'Y `][]V `Y 'hc
	FYjcWUh]cb	dfUWh]WY
8 Uj]X ; UffYhh 6 `U_Y	FY\UV]`]hUh]cb	A Ya VYf']b'[ccX
	Gi gdYbg]cb	ghUbX]b[
A UfW≯fYa m'Gcgg	GigdYbXYX [*] k]h\	A Ya VYfʻ]bʻ[ccX
	7cbX]h]cbg	ghUbX]b[
HYffU [·] BYg\cbXU	8]gVUffYX	B c h'Y`][]V`Y'hc
7Uffc``		dfUWh]WY
@bXgUm; \JmY	⇒bWUdUWjhm`@jgh	B c h'Y`][]V`Y'hc
?YhWXia		dfUWh]WY
G]a cb Fcg]b	Di V`]WFYdf]a UbX	A Ya VYfʻ]bʻ[ccX
		ghUbX]b[
8 Uj]X 5": YfbUbXYn	8]gW]d`]bY	B c h 'Y `][]V `Y 'hc
	FYj cWUh]cb	dfUWh]WY
< 'GhYd\Yb	8]gVUffYX	B c h 'Y `][]V `Y 'hc
<]``YVfUbX		dfUWh]WY
6f]Ub 5" ±1Yb	G7 ⁻ 8]j Yfg]cb	A Ya VYfʻ]bʻ[ccX
		ghUbX]b[
7Ufa Yb 8]UbU	FY\UV]`]hUh]cb	⇒bUWh]j Y``bch
@ VVYW_Y	Gi gdYbg]cb	Y`][]V`Y
8 A Uf_DUmbY	8]gVUffYX	B c h'Y`][]V`Y'hc
		dfUWh]WY
?Yj]b'?YYbUb'7\UgY	FY\UV]`]hUh]cb	A Ya VYf']b'[ccX
	Gi gdYbg]cb	ghUbX]b[

H\]g'g]hi Uh]cb'g\YXg'`][\h'cb'h\Y'VfcUXYf']ggi Y'cZ'dfcZYgg]cbU` WcbXi Wh'UbX'h\Y'fYgdcbg]V]`]h]Yg'h\Uh'Wca Y'k]h\'dfUWh]W]b['`Uk'' 5g'fYdcfhYX'Vm'DU`a '6YUW\'Dcghž'h\Y': `cf]XU'6Uf'a UbU[Yg cj Yfg][\h'Zcf'cj Yf'%%' ž\$\$\$'a Ya VYfg'UbX'd`Umg'U'Wfi W]U`'fc`Y']b a U]bhU]b]b[']bhY[f]hm'k]h\]b'h\Y'`Y[U`'Wca a i b]hm'''H\]g'mYUf U`cbYž'h\Y'Gi dfYa Y'7ci fh'\Ug'X]gdUhW\YX'X]gW]d`]bUfm'UWh]cbg U[U]bgh'gYj Yb'`Uk mYfg'Zcf'j Uf]ci g']bZfUWh]cbg'fUb[]b['Zfca bY[`YWh'hc'a]gWcbXi Wh''

$< ck hc^7 YW_Ub^5 hhcfbYmg^GhUbX]b[$

 $: \verb|cf'h| | cgY'k |]g |]b ['hc'j Yf] Zm'h | Y'ghUhi g'c Z'Ub'Uhhcfb Ym'cf'hc'Z]`Y'U$

 $\label{thm:condition} We a d`U]bhž'h\Y:`cf]XU'6Uf'dfcj]XYg'U'igYZi`X]fYWhcfm'hc'WXYW_Ub'UhhcfbYmg'X]gW]d`]bY'\]ghcfm''.7ca d`U]bhg'WUb'VY'gi Va]hhYX'j]Uh\Y]f'k YVg]hYž'U``ck]b['W]Ybhg'UbX'dYYfg'hc'hU_Y'Ub'UWh]jY'ghUbX]b'Ybgi f]b['UWWci bhUV]`]hm'UbX'hfUbgdUfYbWm''BchUV`mž Wca d`U]bhg'U[U]bgh'UhhcfbYmg'UfY'_Ydh'cb'fYWcfX'Zcf'cbY'mYUf UZhYf'U'Z]`Y']g'WcgYXž'fY[UfX`Ygg'cZ'k\Yh\Yf'h\Ym'k YfY'X]ga]ggYX''$

8 YhU]`g	
Cfh	8 YGchc 7 ci bhmž: `cf]XUžI G5
EiY``Yb	• k k k "\YfU`Xhf]Vi bY"Wca
	• k k k "dU`a VYUW\dcgh"Wca

6 Ygi W Yb 'G]Y 'i bg 'Ui Z 'a Y]b!k]Yb "b Yh