

# **MDIA5004**

A YX]U'UbX'Di V`]WF Y`Uh]cbg

GYa YghYf'C bY''##'&\$%

### 7ci fgY Cj Yfj ]Yk

#### GHJZZ7cbHJWh8YHJ]`q

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]lm	@cWUh]cb	D\cbY
A ]WkUY`? Ybh	n' ) &( \$- ) 4 i bgk "YXi "Ui	H65	&' %E FcVYfh KYVghYf	-',)-,%(

#### GW.cc`7cbhJWh =bZcfa Uhlcb

Fcca " %&ž"Yj Y" FcVYfhK YVqhYf'6i ]X]b[

D\cbY. f\$&Ł'-',) '(,)\*

9a U]`. 'gUa 4 i bgk "YXi "Ui

K YVq]hY. \hada.#qUa "Ufhq"i bgk "YXi "Ui\_

H\Y'GW\cc``cZh\Y'5fhg'UbX'A YX]U'k ci `X'`]\_Y'hc'F YgdYWMZ ``m'5W\_bck `YX[Y'h\Y'HfUX]h]cbU``7i qhcX]Ubqž h\Y'6YXY[U`fPYbq]b[hcb'WJa di qŁž; UX][U`f7]hmUbX'5fh/ '8Yq][b'7Ua di qYqŁ'UbX'h\Y'B[i bbUk U` dYcdYffuEcZh\Y "UbXgk\YfYYUW\ WJa digcZl BGK ]g `cWJhYX"

#### 5 h Y b X U b W F Y e i ] f Y a Y b h g

5 qh XYbh]q Yl dYWYX hc UhYbX U``WUqq WcbhUWi\ci fq Zcf U ZUW!hc! ZUW! fl & L'cf V YbXYX Wci fqY UbX Wca d`YhY'U```UWhjj]hjYg'Zcf'U'V`YbXYX'cf'Zl ``micb`]bY'Wci fgY"

5 'ghi XYbhik \c'Uff]j Yg'a cfY'h\Ub'%) 'a ]bi hYg'`UhY'a UmVY'dYbU`]gYX'Zcf'bcb!UhhYbXUbWY'''⊋qi W\'U'dYbU`hm ]g^]a dcgYXžh\Y^gh XYbha i ghVY^]bZcfa YX^j YfVU``mUhh\Y^YbX`cZWUgg^UbX`UXj ]gYX^]b^k f]h|b[^k]h\]b^&( \ci fg"

ZUʻqh XYbhYl dYf[YbWYq']`bYqqža ]qUXj Ybh fYʻcfʻch\YfʻcVW ffYbW h\Uha U\_YqʻUVqYbW Zfca ʻU Wugg#JWnjj ]mmi buj c]XUV`Yžcf`Yl dYWng hc VY`UVgYbhZfca `U`Zcfh\Wca ]b[ `Wugg#JWnjj ]mmzh\Ymg\ci `X`gYY\_ dYfa ]gg]cb Zfca 'h\Y'7 ci fgY'5i h\cf]mž'UbX'k \YfY'Udd`]WUV`Yž'h\Y]f'fYei Yghg\ci `X'VY'UWWca dUb]YX'VmUb cf][]bU`cf`WfflZYX`WcdmcZU'a YX]WU`WYfhlZWJhY`cf`ch\Yf`Zcfa 'cZUddfcdf]UhY`Yj ]XYbWY"

5 7 ci fqY 5 i h\cf|lma UmYl W qY U qhi XYbh2fca WUqqYq cf UWlij |h|Yq Zcf i d hc cbY a cbh\" < ck Y j Yfz h\Ym a Um'Ugg][b'UXX]hcbU`UbX#cf'U`hYfbUh]j Y'hUg\_g'hc'Ybgi fY'Wca d`]UbWY"'5'7 ci fgY'5i h\cf]miWcbg]XYf]b['h\Y [fubh]b[cZuvgYbWraighvYguh]gZjYX'u'gh XYbhk]```gh]```vY'uv`Y'hc'a YYhh\Y'WcifgY'g``Yufb]b[cihWcaYg UbX#cf'j c'i a Y'cZ'YUfb]b["'5 'gh XYbhgYY\_]b['Uddfcj U'hc'VY'UVgYbhZcf'a cfY'h\Ub'cbY'a cbh\'a i qhUdd`m ]b'k f]h]b['hc'h\Y'8YUb'UbX'dfcj]XY'U```cf][]bU``cf'Wfh]ZYX'gi ddcfh]b['XcW a YbhUh]cb"

: cf'a cfY']bZcfa Uhlcb'UVci hih\Y'UhhYbXUbWY'dfchcWc`q']b'h\Y': UW\`hmcZ5fhq'UbX'GcWjU` GWYbWrg. \httq.#k k k "Uffig"i bgk "YXi "Ui #W ffYbhgh XYbhg#UWJXYa ]W]bZcfa Uhjcb#dfchcWc`g![i ]XY`]bYg#

5 WUXYa ]W = b Zcfa Uh cb ·

: cf`YggYbhJU``ghi XYbh`]bZcfa UhJcb`fY`UhJb[`hc.`fYei Yghg`Zcf`Yl hYbg]cb/fYj ]Yk `cZa Uf\_g/cWW dUhJcbU``\YU`h\UbX`gUZ/hm/Yl Ua ]bUhJcb'dfcWXi fYg/gdYWJU``Wcbg]XYfUhJcb`]b`h\Y`Yj YbhcZ]``bYgg`cf`a ]gUXj Ybhi fY/ghi XYbhYei ]hmUbX`X]gUV]`]hm/UbX`ch\Yf`YggYbhJU``UWUXYa ]W]bZcfa UhJcbž gYY`\hdg.#k k k "Uffg"i bgk "YXi "Ui #W ffYbhghi XYbhg#JWUXYa ]W]bZcfa UhJcb#dfchcWc`g![i ]XY`]bYg#

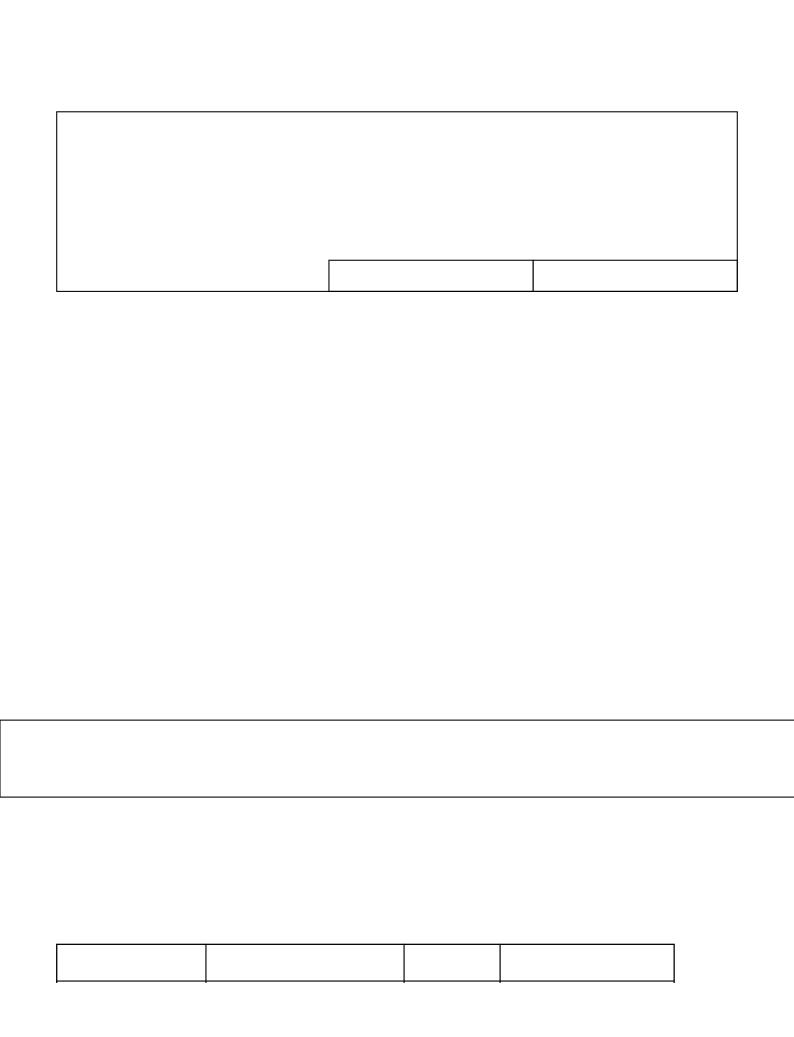
### 7ci fgY 8YHJ] g

7 fYX]hDc]bhg \*

Gi a a UfmcZh\Y 7ci fgY

H\]g'Wci fgY']bHfcXi WYg'ghi XYbhg'hc'di V']WfY'Uh]cbg'k f]h]b['UbX'a UbU[Ya YbhUbX'XYj Y'cdg'h\Y]f i bXYfgHJbX]b['cZdi V']WfY'Uh]cbg']b'h\Y'5i gHfU']Ub'a YX]U'Ybj ]fcba Ybh'Ghi XYbhg'k ]```YUfb'h\Y'VUg]Wg'cZ k f]h]b['U'a YX]U'fYYUgYža UbU[]b['U'dfYgg'WcbZYfYbW'UbX'XYU']b['k]h\'a YX]U'Ybei ]f]Yg"'H\Y'k f]h]b[ Wca dcbYbhcZh\Y'Wci fgY'k]``]bWi XY'k f]h]b['Zcf'h\Y']bhYfbYhžgdYYW\Ygž'di V']WUh]cbgž'Wa dU][ bgžfYdcftg UbX'Wf]g]g'Wca a i b]WUh]cbg"'5g'k Y``Ug'`YUfb]b['hc'k f]hY'UWfcgg'U'fUb[Y'cZ[YbfYgž'ghi XYbhg'k]```YUfb'hc k f]hY'Zcf'U'gY'YWhX'Ui X]YbW'"'H\]g'Wci fgY'k ]``'U'gc'Wcj Yf'h\Y'k Umg'h\UhbYk 'a YX]U'hYW\bc'c[]Yg ]bZi YbW'a YX]U'UbX'di V']WfY'Uh]cbg"'Ghi XYbhg'k ]``'VY'HUi [\hhYW\b]ei Yg'Zcf'i g]b['h\YgY'hYW\bc'c[]Yg'Zcf a YX]U'UbX'di V']WfY'Uh]cbg''Ghi XYbhg'k ]``'U'gc'`YUfb'h\Y'dfcZYgg]cbU''Wcbj Ybh]cbg'UbX'Yb[U[Y k ]h\'h\Y'h\]WD''UbX'Y[U'']qqi Yg'UgqcW]UhYX'k ]h\'di V']WfY'Uh]cbg''

5 hh Y WcbWi g]cb cZh ]g Wci fgY h Y gh XYbhk ]``VY UV Y hc



A YX]U'F Y`YUgY'fl)ı Ł	A YX]U'fY`YUgY'fl \$\$'k cfXgŁ'Ž fUh]cbU'Y'f) \$\$-, \$\$'k cfXgŁ	7 ca a YbhgʻUbXʻ[fUXYʻcb Hifb]h]bžcfʻkf]hhYb ZYXXUW"	
@YHYf'hc'9X]hcf'cf Cd]b]cb'D]YWY'f1)ıŁ	9+1<9F @YHYfhchNYYX]hcf f&\$\$`k cfXgŁŽfUh]cbU`Y f) \$\$-, \$\$`k cfXgŁCF`cd]b]cb d]YWYf] \$\$`k cfXgŁŽfUh]cbU`Y	_	

A YX]U'F Y`YUgY'fl)ı Ł	, ,	: f]XUmž A UfVX '&'	7 ca a YbhgʻUbXʻ[fUXYʻcb Hifb]hJbžcfʻkf]hhYb ZYXXVUW"
@YhYfhc 9X]hcficf	9 <del>+   &lt; 9 F                                </del>	: f]XUmž'5df]`	7 ca a YbhgʻUbXʻ[fUXYʻcb
Cd]b]cb^D]YWY^f1)ı Ł	f&\$\$`k cfXgŁ'Ž`fUhjcbU`Y	&\$	Hifb]h]bžcfkf]hhYb
	f) \$\$-, \$\$"k cfXgŁ"C F "cd]b]cb		ZYYXVUW <u>"</u>
	d]YWY fl \$\$ k cfXgŁŽ fUhjcbUY		
	f) \$\$-, \$\$ k cfXgŁ		
A YX]U d`UbžBcb!	9 dagb SeeWee_Wf, AYX]U	: f]XUmž'A Um	7 ca a YbhgʻUbXʻ[fUXYʻcb
DfcZhCf[Ub]gUh]cb	D`Ubž'Bcb!DfcZ h	%	Hi fb]hjb
fl \$1 Ł	Cf[Ub]gUh]cbf(%2)\$\$!kcfXgL		

.

5ggYgga Ybh' . 'A YX]U'F Y`YUgY

- 1		
- 1		
- 1		
- 1		
L		
- [		

A YX]U'F Y`YUgY'fl)ı Ł	3 0	_	7 ca a YbhgʻUbXʻ[ fUXYʻcb Hi fb]h]bžcfʻk f]hhYb ZYYXVUW_"
@YhhYfhci9X]hcficf	9 <del>                                    </del>	: f]XUmž'5df]`	7 ca a YbhgʻUbXʻ[fUXYʻcb
Cd]b]cb^D]YWY^f1)	f&\$\$`kcfXgŁ'Ž'fUhjcbU`Y	&\$	Hifb]h]bžcfkf]hYb
	f) \$\$-, \$\$`k cfXgŁ'CF 'cd]b]cb		ZYYXVUW <u>"</u>
	d]YWY fl \$\$ k cfXgŁŽ fUhjcbUY		
	f) \$\$-, \$\$ k cfXgŁ		
A YX]U d`UbžBcb!	9 dagb SeeWee_Wf, AYX]U	: f]XUmž'A Um	7 ca a YbhgʻUbXʻ[ fUXYʻcb
DfcZhCf[Ub]gUh]cb	D`Ubž'Bcb!DfcZ h	%	Hi fb]h]b
f1 \$1 Ł	Cf[Ub]gUh]cbf(%2)\$\$!kcfXgŁ		

.

Hi fb]h]b^gYh]b[.^H\]g^Ugg][ ba Ybh]g^gi Va ]hhYX^h\fci [\^Hi fb]h]b^UbX^gh XYbhg^Xc^bchgYY^Hi fb]h]b g]a ]^Uf]hmfYdcfhg"

### Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

 $Gh\ XYbhg\ UfY\ YI\ dYWMYX\ hc\ di\ hih\ Y]f\ bUa\ Yg\ UbX\ gh\ XYbhbi\ a\ VYfg\ cb\ Yj\ YfmdU[\ Y\ cZh\ Y]f\ Ugg][\ ba\ Ybhg\ bug\ Ybhg\ bug\ Yhhg\ Yhhg\ bug\ Yhhg\ Yhhg\ bug\ Yhhg\ bug\ Yhhg\ bug\ Yhhg\ bug\ Yhhg\ bug\ Yhhg\ Yhhg\ bug\ Yhhg\ Yhhg\$ 

#### Hi fb]h]b Gi Va ]gg]cb

⊋mci 'YbWci bhYf'U'dfcV'Ya 'k \Yb'UhhYa dhjb[ 'hc'gi Va ]hmci f'Ugg][ ba Ybhh\fci [ \ 'Hi fb]hjbž'd'YUgY hY'Yd\cbY'9| hYfbU''Gi ddcfhcb'-' , ) '' ' '%cf'Ya U]'hXYa 'cb'<u>Yl hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui</u> ł `G][ b]Z]\WbhmUZZY\Wimci f`dYfZcfa Ub\Wr`]b`UggYggUV`Y`k cf\_ž`VY`]h'U`Zcfa U``YbX!cZgYa YghYf`Yl Ua ]bUh]cbž`U \WUgg`hYghž`U``UVcfUhcfmhYghž`U`gYa ]bUf`dfYgYbhUh]cb`cf`Ubmch\Yf`Zcfa 'cZUggYgga Ybh'

#### 5 WUXYa ]W<cbYghmUbX D`U[]Uf]ga

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i\in\WbihU\_Yia Ubm Zcfa gžZfca iXYi]VYfUhYiW\YUh]b[ihciUVW]XYbhU`mWcdm]b[iZfca iUigci fWlik]h\ci hiUW\_bck iYX[Ya Ybh'i

 $I BGK `[fci dg'd`U[]Uf]ga `]bhc'h\Y'Zc``ck]b[`WUhY[cf]Yg.$ 

7 cdm]b[.'i g]b['h\Y'gUa Y'cf'j Yfmg]a ]`Uf'k cfXg'hc'h\Y'cf][]bU`h\I hcf']XYU'k ]h\ci hUW\_bck `YX[]b['h\Y gci fW'cf'i g]b['ei chUh]cb'a Uf\_g"'H\]g'U'gc'Udd`]Yg'hc']a U[Ygž'Ufh'UbX'XYg][b'dfcYWhgž'Ug'k Y``'Ug dfYgYbhUh]cbg'k \YfY'gca YcbY'dfYgYbhg'Ubch\Yf'g']XYUg'cf'k cfXg'k ]h\ci h'WfYX]hY[cf]Yg.

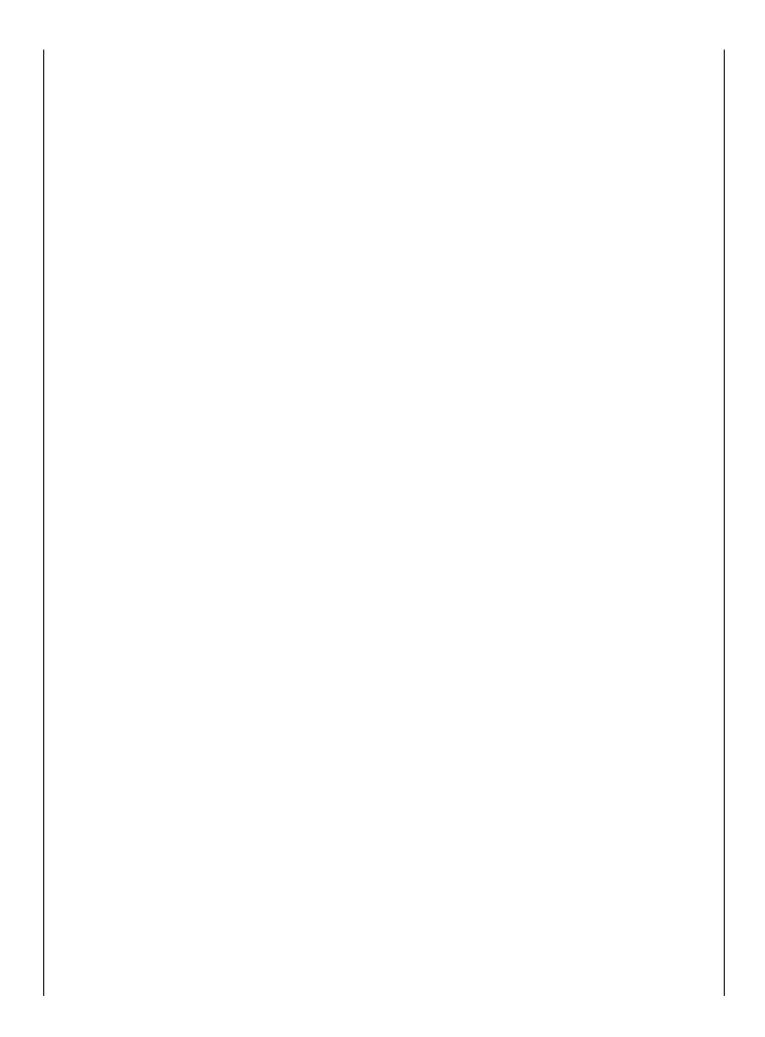
- VYMYfa UbU[Ymcifh]a Y
- i bXYfgHUbX mci f'f][ \hg`UbX`fYgdcbg]V]`]h]Yg`Ug`U`gh XYbh'UhI BGK
  VY`Uk UfY`cZd`U[]Uf]ga žWcdmf][ \hz`I BGK 'Gh XYbh'7 cXY`cZ7 cbXi Wh'UbX`5VWWdhUV`Y`I gY`cZ IBGK '=7 H'F Ygci fWYg'Dc`]Wm

## 7ci fgY GWXYXi `Y

### <u>J]Yk 'WUgg'hja YHUV'Y</u>

## H]a YtUV`Y

8 UhY	HmdY	7 cbhYbh
K YY_'%'&*': YVfi Ufm!'(		?Ybh/ 6cc_Yf
A UfVX		K YY_'% '≢ohfcXi Wh]cb'hc'A YX]U'FY`Uh]cbg'UbX Di V`]WFY`Uh]cbg
		: YVfi Ufm&* A cbXUm
		>c\bghcbž'>"'f&\$% t"'? WW[SdWSf[a`e, ;eegWeS`V efdSfWY[Wef&bX'YX]h]cbtž'7fckg'BYghBGK'5``Yb'/ Ibk]b"'dd"'%-,"
		A U\cbYmž'>'f&\$%+Ł"'BgT {U dW\$f[a`eid[f[`Y/fZ[dV WW[f[a`fžA Y`VcifbY.'ClZcfX'lb]jYfg] mDfYgg"':fcbh a UhhYf'UbX'7\UdhYfg'CbY'UbX'Hkcž'dd"'j-('"
		BUdc`]žD"A "ž'HUmcfžA "ž/ DckYfgž'; "'f%Ł" K f]njb[ 'UWnjj ]njYg'cZdi V`]WfY`Unjcbg'dfUWnjnjcbYfg. H\Y'fY`Unjcbg\]d'VYhkYYb'YI dYf]YbW'UbX'kf]njb[ hUg_g"'BgT'{UDWSf[a`eDWh[W'\$'f1+z'*',\$"
		GłUbłcbžF '&\$\$+ž'? WW[S DWSf[a`ež'A Y`Vci fbY. C I ZcfX I b]j Yfg]lmiDfYgg'dd"'%-, "
K YY_'&.') 'A UfWX'!'%% A UfWX		?Ybh/~6cc_Yf
A OTW		K YY_`&.`A YX]U`fY`Uh]cbg`UbX``]U]gcb.`K \Uh]g bYk g`pF\Yhcf]WUbX`h\Y`F\Yhcf]WU``G]hi Uh]cb`p : fUa ]b[
		A UfWX ') 'A cbXUm
		6]mYfž'@": "'f%-*, Ł"'H\Y'f\Yhcf]WU`'g]h Uh]cb" D\]`cgcd\m'/ 'F\Yhcf]W%f%Łž'%-%("
		<u``u\ubž'?"'f%ł"'gyjyb'acxy`g'czzfua]b[. -ad`]WUh]cbg'Zcf'DiV`]WFY`Uh]cbg"'<agd s^axbgt{u<br="">DWSf[a`eDWeWSdJZł##f1ŁZ'&amp;\$)-&amp;(&amp;"</agd></u``u\ubž'?"'f%ł"'gyjyb'acxy`g'czzfua]b[. 
		A U\cbYmž'>'f&\$%+Ł"'BgT'{UdW\$f[a`eid[f[`Y/fZ[dV VW[f[a`fžAY`VcifbY.'C ZcfX' b]jYfg]hmDfYgg" 7\UdhYf':]jY'dd"',+-%\$*"
I	I	I



	K YY_'). A UfW\' \\$ž; ccX': f]XUm <c`]xum< th=""></c`]xum<>
6fYU_,`&`5df]`'!`, '5df]`	
K YY_'*.'-'5df]`'!'%)'5df]`	? Ybh
	K YY_'*.'5df]`'-'AcbXUmfAUghYfgFYUX]b[ K YY_Ł"BchY.'? YbhfAcbXUmŁk]``\c`X'WUgg'h\]g XUm]Zh\YfY'UfY'bc'cV'YWnJcbg"''
	K YY_'*.`A YX]U'd`Ub.`F YgYUfW\žGhfUhY[ mUbX D`Ubb]b[ 'pA 6Cž; cU`gžCV^YWhjj YgžGhfUhY[]Ygž HUWhjWg'''''
	5df]``- `A cbXUm
	>c\bghcbž'>"'f&\$%' Ł"'? WW[S dWSf[a`e, ;eegWe S`V efcSfWY[We f&bX'YX]h]cbŁž7fckg'BYghBGK.'5``Yb'/ I bk]b"'dd"'
	? Ybhž'A "'@'ž'f&\$%%L"'BgT'{U dWSf[a`eid[f[`Y, 3 dZWfad[US^SbbdaSUZž'6cghcb.'5``mb'/'6UWcb"ž7\UdhYf'CbYž'dd"'*-%("
	A U\cbYmž'>'f&\$%+Ł"'BgT'{UdWSf[a`eid[f[`Y/fZ[dV VW[f[a`fžAY`VcifbY.'ClZcfX'lb]jYfg]lmiDfYgg" 7\UdhYfg'H\fYY'UbX':cifž'dd"'(+-,\$"
	GHJbhcbžF"'f&\$\$+L"'? WW[SdWSf[a`e"'AY`VcifbY. ClZcfX'Ib]jYfg]hmDfYgg"'dd"'''-')ž'',-()"
	K ] `Wclž8" 'f&\$\$- Ł" 'BgT {U dWSf[a`eid[f[`YS`V _ WW [S fWUZ`[cgWefth 'YX]h]cbŁz6cghcb. 'DYUfgcbz5'mb'/ '6UWcb" 'dd" '(,'-)\$&"
K_YY_"+."%*"5df]"!"&&	? Ybh
5df]`	K YY_'+.'A YX]U'd`Ub.'HUWN]WgžH]a Y`]bYg'UbX 6i X[Yhgž'9j U'i Uh]cb
	5df]`'%*'AcbXUm
	A W9`fYUh\ž'A "'D"'f% - +Ł"'? S` SY[` Y ekefW_ Sf[U S` V WfZ [US^bgT (U dWSf[a` e US_ bS[Y` e /eWUa` V W [f[a` fž'BYk 'Mcf 'A W fUk!<]``"'7 \UdhYf'9][ \hž'dd" &+' -' %*"
	A U\cbYmž'>'f&\$%+Ł"'BgT'{UdWSf[a`eid[f[`Y/fZ[dV VW[f[a`fžAY`VcifbY.'ClZcfX'Ib]jYfg]mnDfYgg" 7\UdhYfž'9`YjYbž'&&&(&ž'fYj]Yk'W\UdhYfg':]jY UbX'GYjYb"
	K ]`Wcl ž8 f&\$% Ł" BgT (U dWSf[a`ei d[f[`YS`V_ WW[SfWUZ` [cgWe f+h\ YX]h]cbŁž6cghcb. 'DYUfgcbž'5``mb/

		6UWtb" <sup>-</sup> dd" <sup>-</sup> %( &—%( ( "
K YY_`, . '9j U`i Uhjcb`cZa YX]U`fY`Uhjcbg`d`Ubg  5df]``&' `A cbXUm  A U\cbYm\vec{x} > f&\vec{k}\\\+\t''BgT`{U dWSf[a`eid[f]`Y/fZ[dV	K YY_', .'&' '5df]`'!'&-	
A U\cbYmž'>'f&\$%+Ł"'BgT (JU dWSf[a`ei d[f[`Y/fZ[dV	barj	K YY_', . '9j U'i Uhjcb'cZa YX]U'fY`Uhjcbg'd`Ubg
A U\cb\nz\rightarrow\text{Es}\%-te^BgI\fu\dw\sfa^e\eld{qt}\ Y\fz\{dv\\\faire\} \frac{dt}{V}\faire\} \frac{dt}{V}\frac{dv}{V}\f		5df]``&' `AcbXUm
		A U\cbYmž'>'f&\$%+Ł"'BgT'{UdWSf[a`eid[f[`Y/fZ[dV WW[f[a`fž
I I		

	5 fh\nif`DU[Y`9h\]Wg`AcXi`Yg.`
	A Um+A cbXUm
	? Ybhž'A "'@'ž/ 'HUmcfž'A "'f&\$%* Ł"': fca '\ca c YWcbca ]W g'hc'\ca c'X]U`c[ ]W g. F Yh\]b_]b[ 'gcW]U` a YX]U'i gY']b'7 GF 'Wca a i b]WUh]cb"'BgT {U D WSf[a`

F Ygci fWYg

DfYgWf]VYX F Ygci fWYg