

< YWX YbXcfZYf'GhfU» Y. '6Ui ghY``Yb!7\Ucg i bX'bYi Y'< U`hYghY``Y']b'< YffgWX]b[

#D'<YffgWX]b['[Y\h'Yg'k]YXYf'`cg.'8]Y'6Ui UfVY]hYb'Ub'XYf
<YWXYbXcfZYf'GhfU»Yž'X]Y'gY]h'8]YbghU[']b'j c``Ya ; Ub[Y'g]bXž
g]bX'Y]b'k]WXh][Yg'NY]WXYb'ZØf'X]Y'JYfVYggYfi b['XYf'#bZfUghfi_hi f
j cf'XYa 'GWXi `VY[]bb"'8]Y'GhfU»Yž'X]Y'VYgcbXYfg'j cb
:i »[Àb[Yfb'[Ybi hnh'k]fXž'Yf\À`h'Y]bYb'bYi Yb'; Y\kY[ž'i bX'Ui WX
X]Y'ghUf_'VYgWXÀX][hY': U\fVU\b'gc```VU`X'YfbYi Yfh'k YfXYb"</pre>

8]Y'6Ui UfVY]hYb'\UhhYb'VYfY]hg']a '\(\frac{1}{2}\) '\(\frac{1}\) '\(\frac{1}{2}\) '\(\frac{1}{2}\) '\(\frac

6Ui ZcfhgWXf]hhY'Ui Z'XYf'< YWXYbXcfZYf GhfU»Y

8 Yf: c_i g``]Y[h'bi b'XUfUi Zž'XYb'fYWkhYb'; Y\k Y['ZYfh][ni ghY``Ybž VYj cf'a Ub'g]Wk'XYa ``]b_Yb'; Y\k Y['k]Xa Yh" 8 UbUWk'k YfXYb k]f'Y]bYb'HYfa]b'ZØf'X]Y'J c``gdYffi b['XYf'GhfU» Y'UbgYhnYbži a X]Y': U\fVU\b'gUb]YfYb'ni '_ObbYb ž'Yf_`ÀfhY'GhfcV``k Y]hYf"'8]YgY J c``gdYffi b['YfZcfXYfh'YXcWk'Y]bY'gcf[ZÀ`h][Y'D`Ubi b[ži a 'X]Y

 $\label{eq:ni_problem} \begin{tabular}{ll} Ni & [Ab[`]WX_Y]h'ni & f'bUY[Y`Y[YbYb':]bUbngWXi `Y'b]WXh'ni \\ VYY]bhfAWXh][Yb" \end{tabular}$

8]Y'5bk c\bYf'\UVYb'VYfY]hg'X]Y'YfghYb'6Ui UfVY]hYb'VYa Yf_hž X]Y'HY]''Y]bYg'i a ZUggYbXYb'D'Ubg'g]bXž'X]Y'; Y\k Y[Y'i bX'GhfU» Yb]b'X]YgYa '6YfY]W'i a ZUggYbX'ni 'gUb]YfYb"'K À\fYbX'XYf Gca a YfdUi gY'XYf'6Ui Z]fa U'k i fXY'Ub'XYb'J cfUfVY]hYb [YUfVY]hYhž'i a 'XUg'J cfUb_ca a Yb'bUW'XYa 'I f'Ui V'ni VYgW\'Yi b][Yb"'8YbbcW\'V'Y]Vh'XYf'NY]hd`Ub'j U[Y"' 8Ug'_Ubb']b %('HU[Yb'gY]bž'Yg'_Ubb'Ui W\']b'XfY]'K cW\Yb'gY]b ž'a Y]bhY GhfcV'ž'c\bY'g]W\'Ui Z'Y]bYb'XYZ]b]h]j Yb'NY]hfU\a Yb'ZYgh'Y[Yb'ni k c'`Yb"

I a VUi 'XYf'6i g\U`hYghY``Y'Ub'XYf A Ø\`ZY`XYf'GhfU» Y

9]bY'k Y]hYfY'VYXYi hYbXY'6Ui ghY``Y']b'<YffgW\]b[']gh'XYf'I a VUi XYf'6i g\U`hYghY``Y'j cf'XYf'7\f]gh]Ub!A cf[YbghYfb!GW\i`Y'Ub'XYf A Ø\`ZY`XYf'GhfU» Yž'XYf'YVYbZU``g'Ua '8]YbghU['VY[Ubb"'A]h'Y]bYa 6i X[Yh'j cb'%&) "\$\$\$'9i fc'k]fX'X]YgYf'I a VUi 'bchk YbX][ž'i a 'XYb 5bZcfXYfi b[Yb'Y]bYf'♣_`i g]cbggW\i `Y'[YfYW\h'ni 'k YfXYb" 6Øf[Yfa Y]ghYf'7\f]gh]Ub'GW\]``Yf'Ài »YfhY'X]Y'<cZZbi b[ž'XUgg'X]Y 5fVY]hYb'V]g'ni a 'GW\i `VY[]bb'UV[YgW\`cggYb'g]bX.' 8Ug 'YXYbZU``g']gh'XYf'D`Ub ž'gc'GW\]``Yf"

8]Y'Bchk YbX][_Y]h'X]YgYf'I a VUi a U» bU\a Yb'nY][h'XUg 6YghfYVYb'XYf'; Ya Y]bXYž'6Uff]YfYb'UVni VUi Yb'i bX'U``Yb GW\Ø`Yfb'Y]bYb'[`Y]W\VYfYW\h][hYb'Ni [Ub['ni f'6]`Xi b['ni Yfa Ò[`]W\Yb"'8]Y'JYfnÒ[Yfi b[Yb'VY]'XYb'6Ui UfVY]hYb'ghY``Yb YXcW\'gck c\``ZØf'X]Y'5bk c\bYf'U`g'Ui W\'ZØf'X]Y'GW\Ø`Yf'Y]bY < YfUi gZcfXYfi b['XUfž'XU'i b_`Uf'V`Y]Vhž'cV'U``Yg'fYW\hnY]h]['ni a GW\i `ghUfh'ZYfh]['gY]b'k]fX"

Ni gUa a YbZUggYbX``Àggh'g]W\'gU[Ybž'XUgg'X]Y'Ub\U`hYbXYb
6Ui UfVY]hYb']b'<YffgW\]b['gckc\``k]W\h][Y'JYfVYggYfi b[Yb'ZØf
X]Y'\DZfUghfi _hi f'XUfghY``Yb'U`g'Ui W\'VYXYi hYbXY
<YfUi gZcfXYfi b[Yb'gckc\``ZØf'X]Y'5bkc\bYf'U`g'Ui W\'ZØf'X]Y
; Ya Y]bXY'a]h'g]W\'Vf]b[Yb"'8]Y'[Yd`UbhYb'A U»bU\a Yb'g]bX'_`Uf.

:i » k Y[Y'gc``Yb'g]Wk YfYf'[Ya UWk hii bX'XYf'Ni [Ub['ni f'GWki `Y
j YfVYggYfh'k YfXYb"'H]a]b['i bX'?ccfX]bUh]cb''YXcWk'V`Y]VYb
k À\fYbX'X]YgYf'6Ui d\UgY'YbhgWkY]XYbXY': U_hcfYbž'i a 'X]Y
I bUbbY\a `]Wk_Y]hYb''ZØf'U``Y'6YhY]`][hYb'gc'[Yf]b['k]Y'a Ò[`]Wk'ni
\U`hYb"

8 Y hU] `c

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