

8]Y; chhYgUbVYhYf]b YfcVYfh BFK. ?`]a Uk UbXY`U`g K Y[VYfY]hYf

8]Y'9i fcdÀ]gWXY'; chhYgUbVYhYf]b'VfY]hYh'g]WX'k Y[Yb'XYg ?`]a Uk UbXY`g']b'BFK 'Ui g"'9l dYfhYb'VYf]WXhYb'j cb k UWXgYbXYb': i bXYb"

#D:XYb:`YhnhYb: *J\fYb:\Uh:X]Y:9i fcdA]gWXY; chhYgUbVYhYf]b:]b
BcfXf\Y]b!K YghZU`Yb:ni bY\a YbX:i » [YZUggh":9I dYfhYb
VYf]WXhYbz:XUgg:X]Y:k Afa Y`]YVYbXY:5fhz:X]Y:hfUX]h]cbY```]a
A]hhY`a YYffUi a 'VY\Y]a UhYh:]ghz:XUb_:XYg:?`]a Uk UbXY`g:]a a Yf
k Y]hYf:F]WXhi b['BcfXYb:j cfXf]b[h":6YgcbXYfg:VYa Yf_Ybgk Yfh:]ghz
XUgg:X]Y:#bgY_hYb:ØVYf:X]Y:HA`Yf:j cb:A cgY`i bX:F\Y]b:]b
F]WXhi b['XYg:9a g`UbXYg:k UbXYfb":9]bY:[YbUi Y:5i gk Yfhi b['XYf
6YcVUWXhi b[Yb:Xi fWX:K]ggYbgWXUZh`Yf:XYg:@K @!
BUhi f_i bXYa i gYi a g`]b:A ØbghYf:nY][hz:XUgg:X]YgY:#bgY_hYbUfh
Ui Z[fi bX:XYf:ghY][YbXYb:8i fWXgWXb]hhghYa dYfUhi fYb:]a a Yf
\Ai Z][Yf:]b:X]YgYf:FY[]cb:[Yg]WXhYh:k]fX"

8]Y; chhYgUbVYhYf]bž:X]Y Y]bY VYY]bXfi W_YbXY @Ab[Y j cb V]g ni UWXhNYbh]a YhYfb YffY]WXYb _Ubbž\Uhi]b XYb ``YhnhYb JU\fYb b]WXh bi f']\fYb @YVYbgfUi a `Yfk Y]hYfhž:gcbXYfb Ui WX VY[cbbYbž:g]WX ni 'j Yfa Y\fYb" 8f" JUb 'C `Y '?f]Y[gž:XYf'A i gYi a gX]fY_hcf'XYg @K @! A i gYi a g'ZØf'BUhi f_i bXYž:ghY``h'ZYgh `?`Uf']ghž'XUgg'X]Y 'H]YfY a UbWXYfcfhg'Ui WX 'VY]'i bg'gWXcb : i » '[YZUggh'\UVYb'i bX'g]WX 'gY]h Y]b][Yb JU\fYb j Yfa Y\fYb" '8]Yg']gh'Y]b XYi h`]WXYg'NY]WXYb 'ZØf X]Y '5bdUggi b[gZÀ\][_Y]h'i bX'XUg', VYf`YVYb 'X]YgYf' \DgY_hYb']b Y]bYa 'q]WX j YfAbXYfbXYb'?`]a U"

8YfBcfXYbk]fXYfcVYfh

 $9]b~6~]W_~Ui~Z~X]Y~j~YfgWX~]YXYbYb~F~Y[~]cbYb~B~cfXf\Y]b!K~YghZU~Ybg$

8 c WX 'b]WX h'U``Y': i bXY'ghUa a Yb'Ui g'XYb
< Ui dhj YfVfY]hi b[g[YV]YhYb"'9I dYfhYb'k Y]gYb'XUfUi Z'\]bž'XUgg
6Yf]WX hY'ØVYf'G]WX hi b[Yb']b'GhÀXhYb'k]Y'A ØbghYf'cXYf']b'XYf
; fUZgWX UZh'6Ybh\Y]a ']b'B]YXYfgUWX gYb'cZh'Ui Z
9]bnY`h]YfVYk Y[i b[Yb'ni fØW_ni ZØ\fYb'g]bX"'8]YgY'_ObbhYb'Xi fWX
XYb'HfUbgdcfh'j cb'; ØhYfbž'Yhk U'dYf'6U\bž'j Yfi fgUWX h'k YfXYbž
k c'g]WX'X]Y'H]YfY'XUbb']b']gc`]YfhYb'; YV]YhYb'Y]bb]ghYb"
; `Y]WX nY]h]['Yfa O[`]WX h'X]Y': À\][_Y]h'XYf'K Y]VWXYbž
i bVYZfi WX hYhY'9]dU_YhY'ni '`Y[Ybž'X]Y'g]WX'YVYbZU``g'ni
BUWX_ca a Yb'Ybhk]W_Y`b'_ObbYbž'Y]bY'fUgWXY'5bg]YX`i b[']b
bYi Yb'; YV]YhYb"

8]Y'>U[XghfUhY[]Y'XYf'; chhYgUbVYhYf]b

 $8]Y ; chhYgUbVYhYf]b [Y \Ofhini fi: Ua]]Y : XYf : Ub[gW fY \underline{W}Yb i b X] \\]gh : VY _Ubbh : ZØf] \fY : a Uf _UbhYb : Ub[Ufa Y z X]Y]b : Fi \ YghY ``i b[: Ub X]Y : ? Ofd Yf \ U`hi b[: Y]b Yg : VYhYb XYb : A YbgW Yb : Yf]b b Yfb : : XU \ Yf Ui W : XYf : B Ua Y : ; chhYgUb V YhYf]b : "8]YgY : 5 fa Y : g]b X : a]h : 8 c fb Yb Ui g[YghUhhYh i b X : X]Yb Yb : U`g : YZZY _h]j Y : $U[Xk UZZY ": 8]Y : H]YfY : g]b X]b : XYf : @U[Yz : V`]hng W b Y ``` b U W : _ `Y]b YfYb : $b g Y _hYb : k]Y < Yi g W f Y \ Yb : c XYf : `]Y[Yb : ni ni g W `U[Yb i b X : X]Yg Y : ni : ZUb[Yb "$

 $\label{thm:linear_equation} $$\operatorname{Hmd}_{gWXYfk}_{gY}^{gY}^{gY}^{gY}_{gY}^{gY$

8 Y hU]`c

6 Ygi WX Yb 'G]Y 'i bg 'Ui Z. 'b!U["XY