

JZ@~6cWia~gWXY]hYfh~ZfØ\~]a~8:6!Dc_U`. ¸VYffUgWXib[~]b~FY[YbgVif[

JZ@6cWia 'gWXY]hYfh'ZfØ\']a '8:6!Dc_U`"'\&'6ibXYg`][]ghYbn]Y\Yb'kY]hYfž'kÀ\fYbX'5i[gVif['ibX'BØfbVYf['ZØf']VYffUgWXib[Yb'gcf[Yb"

Dcg]h]j Y '9f[YVb]ggY 'XYf'UbXYfYb 6i bXYg`][]ghYb

 $= a + Y[YbgUhn'ni + 6cWi a + 2cbbhYb'X]Y'a Y]ghYb'6i bXYg`][]ghYb] Y'Gd]Y`Y'YfZc`[fY]WX'[YghU`hYb''Jcb']bg[YgUa h'%' A UbbgWXUZhYb'\UVYb'g]WX'bi f'XYf'JZ@'6cWi a 'b]WXh'ZØf'X]Y$

 $\label{eq:continuous_problem} nk\ Y]hY\ Fi\ b\ XY\ ei\ U^]Z]n]Y\ fh'''6Y]gd]Y^gk\ Y]gY'nY][\ hY'XYf':\ 7.5i\ [\ gVi\ f[\ Y]bY'ghUf_Y'@Y]ghi\ b[\ '[\ Y[\ Yb'\ J\]_hcf]U'6Yf^]bž'bUWXXYa 'g]Y'ZfØ\ ']b\\ FØW_ghUbX'[\ YfUhYb'k\ UfYb'''A\]h'Y]bYa '9bXghUbX'j\ cb'(\ .%'fYhhYhYb' g]Y'g]WX'a]h'Y]bYa 'ØVYfnYi [\ YbXYb'Gd]Y^'Ui\ g'XYf';\ YZU\fYbncbYž X]Y'g]Y']b'XYf'`YhnhYb'GU]gcb'Yf`YVh'\UhhYb''$

8]Y 'HYUa g'k]Y 'XYf'GJ '9'j YfgVYf['i bX'XYf'G7'DUXYfVcfb'nY][hYbg]WX 'YVYbZU``g'ghUf_'i bX'[Yk UbbYb'Y]bXYi h][ž'c\bY'XUVY]
bYbbYbgk YfhY 'DfcV`Ya Y'ni '\UVYb"'9'j YfgVYf['gWX'i ['JZJ'\$* <]`XYg\Y]a 'a]h'+.\$ž'k À\fYbX'XYf'G7'DUXYfVcfb'a]h'(.\$'[Y[YbXYb'6fYa Yf'GJ'hf]i ad\]YfhY"'5i WX'<Yfh\U'6G7'i bX'XYf'GJ8Ufa ghUXh'_cbbhYb'a]h'_`UfYb'G]Y[Yb'Ui Zk UfhYb'i bX'n]Y\Yb']bX]Y'bÀWXghY'Fi bXY'Y]bž'k Ug'nY][hž'XUgg'X]Y'6i bXYg`][U!HYUa g[i h'j cfVYfY]hYh'g]bX"

9`Za YhYfgWX]Y» Yb ZØf XYb '%": 7 B Øfb VYf[

8 Yf'%": 7 B Øfb VYf['Yf`Y VhY 'XU[Y[Yb 'Y]b 'gd Ubb Yb XYg 'Gd]Y `ž XUg]b 'Y]b '9 `Za YhYfgW.]Y » Yb 'a Øb XYhY "'8 Yf'7 `i V 'i bhYf'XYa 'b Yi Yb HfU]b Yf'A]fcg`Uj '? `cgY 'gW. UZZhY 'Ygž'XYb '`Yhnh'À\f][Yb '8: 6! Dc_U`gW. fY W_ž XYb '%": 7 'GUUf VfØW_Ybž'Ui g 'XYa 'Hi fb]Yf'ni k Yf ZYb " 'Y]b Yg '%. % 'b UW. 'J Yf`Àb[Yfi b['g]W. YfhY 'g]W. B Øfb VYf['XYb 'G]Y['a]h') .' ']a '9 `Za YhYfgW.]Y » Yb "'7 \f]gh]Ub A Uh\Yb]Už 'XYf 'Hcf\ØhYf 'XYg '7 `i Vgž'\]Y `h XYb 'YbhgW.Y]XYb XYb 9 `Za YhYfž'k Ug 'X]Y 'B Yfj Yb 'Y]b Yg 'YXYb : Ubg 'V]g'ni f '`YhnhYb GY_i b XY 'Ui Z'X]Y 'Dfc VY 'ghY``hY "

K Y]hYfY'k]Wkh][Y'; fi ddYb'ghY\Yb'YVYbZU``g'j cf < YfUi gZcfXYfi b[Ybž'k À\fYbX'K YfXYf'6fYa Ybž'XYf'J Z@'K c`ZgVi f[i bX'9]bhfUWkh': fUb_Zi fh'bcWk']\fY'Gd]Y`Y']b'XYf'YfghYb'Fi bXY UVgc`j]YfYb'a ØggYb"'8]YgY'HYUa g'g]bX'[YZcfXYfhž']\fY @Y]ghi b[Yb'ni 'VYghÀh][Yb'i bX'a Ò[`]WkYfk Y]gY'Ub'X]Y'9fZc`[Y'XYf UbXYfYb'6i bXYg`][]ghYb'Ubni _bØdZYb"'9]b'VYgcbXYfYg 5i [Yba Yf_'`]Y[hj cf'U``Ya 'Ui Z'K YfXYf'6fYa Ybž'X]Y'VY]'9bYf[]Y 7chhVi g'UbhfYhYb'a ØggYbž'i bX'X]Y': Ubg'g]bX'[YgdUbbhž'k]Y'g]Wk X]Y'A UbbqWk UZh'gWk`U[Yb'k]fX"

GdUbbi b['V`Y]Vh']a '8: 6!Dc_U`

8]Y'6YXYi hi b['XYg'8: 6!Dc_U`g'ZØf'X]Y JYfY]bY

 $8 \ Yf'8: 6!Dc_U`ghY``h'ZØf'j]Y`Y'JYfY]bY'Y]bY'k]WXh][Y'A O[`]WX_Y]h XUfž'g]WX'Ui Z'bUh]cbU`Yf'9VYbY'ni 'VYk Y]gYb'i bX'ni gAhn`]WXY Z]bUbn]Y``Y'A]hhY``ni '[YbYf]YfYb'''6YgcbXYfg'A UbbgWX UZhYb'Ui g i bhYfYb'@][Yb'hfAi a Yb'cZh'j cb'Y]bYa ', VYffUgWXi b[gg]Y['[Y[Yb \cWX_UfAh][Y'; Y[bYfž'k Ug']a '\Ref{X}YU`ZU``'Ui WX'Y]bYb'Z]bUbn]Y``Yb GWXi V'Xi fWX'H]W_Yhj Yf_Ai ZY'i bX'A YX]YbfYWXhY'ni f': c`[Y'\UVYb _Ubb''\Ref{a} '\Ref{X}\f'&$&' 'k Uf'XUg'; YgUa hdfY]g[Y`X'ZØf'XYb'8: 6!Dc_U`Ui Z'ØVYf'' $'A]``]cbYb'9i fc'Ub[Yk UWXgYbž'k Ug'Y]bYb'5bfY]n'ZØf U``Y'hY]`bY\a YbXYb'JYfY]bY'XUfghY``h''$

 $: \varnothing f^*X]Y^*6i bXYg^*][U!7^*i Vg^*]gh^*XYf^*Dc_U^*ni XYa Y]bY^*7 \setminus UbW^*z^*Y]bYb H]hY^*ni Yk]bbYb^*i bX^*g]Wk^*Z\varnothing f^*X]Y^*I 9: 5!?ca dYh]h]cbYb^*ni ei U^*]Z]n]YfYb^**8]Y^*6YXYi hi b[^*XYg^*Dc_U^*g^*k]fX^*Xi fWk^*X]Y^*5bnU^* XYf^*Ni gWk Ui Yfz^*X]Y^*YXYg^*J\f^*]b^*XYb^*GhUX]Yb^*i bX^*j cf^*XYb 6]^*XgWk]fa Yb^*ni YgY\Yb^*g]bXz^*XYi h^*]Wk^**=a YJ\f^*&$&&#k' YfYfZc^*[hYbfi bX^*+z^*A]^**]cbYb^*Ni gWk Ui Yf^*X]Y^*Gd]Y^*Y^*]a Yb$. 6!Dc_U^**]j Yz^*k Ug ni bY\a YbXYg^*JhYfYggY^*i bX^*X]Y^*\c\Y^*Ya ch]cbU^*Y^*6YXYi hi b[^*XYg K YhhVYk YfVq^*i bhYfqhfY]Wk h"$

8]YFc``Yjcb`HfUbgZYfU_h]j]hÀhYb`ibX HfU]bYfkYWXgY`b

6Y] XYf 5bU mgY j cb J YfhfU[`]WX _Y]hYb i b X 5V `Ài ZYb]a :: i » VU ``]gh Yg k]WX h][ž X]Y 5i gk]f_i b[Yb j cb HfUbgZYfg i b X

HfU]bYfk YWkgY`b`ni `VYhfUWkhYb":8Yf`J Z@'6cWki a ž'XYf`]b`X]YgYf GU]gcb`[fc»Y`<YfUi gZcfXYfi b[Yb`ni `a Y]ghYfb`\Uhž`\Uh`]b`XYf Gca a YfdUi gY`a Y\fYfY`Gd]Y`Yf`j YfdZ]WkhYhž`i a `XYb`?UXYf`ni ghÀf_Yb":8YbbcWk`V`Y]Vh`XUg`HYUa `\]bhYf`XYb`9fk Ufhi b[Yb ni fØW_ž'k Ug`b]Wkh`ni `Yhnh`Ui Z'X]Y`5bdUggi b[gdfcV`Ya Y`i bhYf XYa `bYi Yb`HfU]bYf`DYhYf`NY][`Yf`ni fØW_ni ZØ\fYb`gY]b`_ObbhY" 9]b`A\b`]WkYg`GWk]W_gU``Yf`YVhY`XYf`: 7`GWkU`_Y`\$(`]b`XYf`GU]gcb &\$&&#&' ž'k c`Y]b`gWkbY``Yf`HfU]bYfk YWkgY``b]Wkh`X]Y`[Yk ØbgWkhYb FYgi `hUhY`VfUWkhY`i bX`X]Y`A UbbgWkUZh``YhnhYbX`]Wk`UVghY][Yb a i gghY"

8]Y'G]hi Uh]cb']a 'Dc_U`'_Ubb'Ui W\'U`g'±bX]_Uhcf'ZØf'X]Y
Ni Zf]YXYb\Y]h']bbYf\U`V'XYf'A UbbgW\UZh'i bX'XUg'HYUa !?`]a U
[YXYi hYh'k YfXYb"'HYUa g'a]h'ghUV]`Yb'Ghfi _hi fYb'i bX'[i h
\Ufa cb]YfYbXYb'Gd]Y`Yf'hYbX]YfYb'XUni ž']a 'Dc_U`'VYggYf
UVni gW\bY]XYb'U`g'A UbbgW\UZhYbž'X]Y'g]W\']b'Y]bYf
I a Vfi W\d\UgY'VYZ]bXYb"

8 Y hU1`a

6Ygi WXYb G]Y i bg Ui Z. a Y]b!VYf`]b bYh