WassesPS b ee er n k3 uar 9

9

s ievcmt rl i
at cmce li'i lo rl iA
i . g. Wunp, H

at lvc s n rs l i 'l v it lop
i u rkw gt kvp-) pk, p

I soGi i esotltriou v i
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e ryp, i p'op (wp- b,.

g mi - o0 my

e |"u|s w ws R

- d ws w uw
  s w ww " w
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- l vw s vus u w
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- d vw u sw w
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- o |wu u s v
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Outline

E   e   v u "

EM [knf U s   U s wk   v

EO U s   ku   ws v Suuw " ' U s
    g w tw

EU kw s s " ' e wysuwy
    e   w w s "

F   Suuw b u "   s v m ""
    b u "

Eh [knf U s   U s wk   v RU   u
    " | VVwys   S ' w

Ej   VVv   u

E—o |w U   u   s v VVv   u
     S wUs w

E   [knf U s   U s wk   v RS k t   w
    l s   j w " ' s j wwwuw s
    rskwbuf VVs s g w tw

EG   VVvys   g w tw "wS "   w

EI   o s .m

axr r eu   cgur ntd l   aga-Tgyng | R gufmgv   Asv | guv ut aga-Tgyng | R gufmgv   R gufmgv

E   t -vul . i -aut

N znk vxki kj α mi ngvzkxy. ; k α zxuj ' i kj s gt] hgyoi zkxs y gt j i ut i kvzy ul F - - uhpki z0
uxdkt zkj vxumxgs s α m l d k gryu j oyi ' yykj u ' x vxumxgs   j k–kruvs kt z s kznuj urun]Cd k
ykrki zkj gvvxuvxogzk gzzxdh ' zky gt j hkng–αxy lux kgi n i rgyy gt j yvki ddkj znk s gt t kx α
; ndi n uhpki zy ul u ' x i rgyyky i urrghuxgzkj ; αn uhpki zy ul F - - Yzgt j gxj Pdhxgx] i rgyyky zu
gi i us vroyn kgi n vxumxgs "y u–kxgrr mugryl

    N znoy i ngvzkx. ; k zgqk g j kkvkx ruuq gz i rgyyky 1d k ' yk gt α zkmxgzkj [knf i rgyy i gyk
yz' j] α huzn znoy i ngvzkx gt j F ngvzkx 43. F rgyyky CD Gkkvkx Puuq. Ugxz 5 zu j ks ut yzxgzk
yk–kxgr i rgyy i ut yzx' i zout i gvghαrozky 1d k hkmαt ; αn g [knf i rgyy zngz xk–dk; y yk–kxgr ul
znk lkgz' xkyvxkykt zkj α znk vxki kj α mi ngvzkxy 1a nk k k[gs vrk gryu j ks ut yzxgzky gt αs vux0
zgt z F - - yulz; gxk kt mαt kkxα mi ut i kvz   ' y α mg vxkvxui kyyux; xgvvkx α nkgj kx lαrky zu
vxk–kt z znk i uj k α znk nkgj kx lxus hkα mα i r' j kj α zu znk ygs k yu' xi k i uj k lαrs uxk
zngt ut i k1Yα i k g i rgyy i gt hkj klαrkj ut r] ut i k. ' y α my' i n vxkvxui kyyux j okki zo–ky vxk0
–kt zy s ' rzovrk j klαt αout kxxuxy1

    S k[z. ; k j oy' yy i rgyy yi uvk gt j znk xkrgzout ynovy gs ut mi rgyys ks hkαy 1d k j ks ut 0
yzxgzk nu; i rdkt z i uj k i gt gi i kyy g i rgyy'y rvcmkd s ks hkxy –αg znxkkk z] vky ul   ngt j rky
znk t gs k ul gt uhpki z. g xkdkxkt i i kzu gt uhpki z uxg vuα zkxzu gt uhpki z1Dy] u' "rrykk. uhpki z
t gs ky gt j xkdkxkt i ky i gt hk' ykj ; αn znk j uz +., s ks hkx ykrki zαut uvkxgzuxzu gi i kyy g
rvcmkd s ks hkx. gt j vuα zkxy i gt hk' ykj ; αn znk gxxu; +1A, s ks hkx ykrki zαut uvkxgzux1

    d k j oy' yy g i rkyy l' t i zout yzngzα i gt xkgj ux j oyvrg] j gzg α gt uhpki z1Di us s ut ' yk
ul g i rkyy l' t i zout y α zu zkyz znk zx' zn ux lgryα] ul i ut j α zout y   y' i n l' t i zout y gxk qt u; t
g y vxkj α gzkl' t i zout y 1d k gryu j ks ut yzxgzk znk t uzout ul g ' zαrα] l' t i zout +gryu i grrkj g
nkrvkx l' t i zout , g rskwbuf s ks hkx l' t i zout zngz y' vvuxzy znk uvkxgzout ul znk i rgyy'y
rvcmkd s ks hkx l' t i zout. h' z α oy t uz α zkt j kj lux ' yk h] i rdkt zy ul znk i rgyy1

    N znk yki out j [knf i rgyy i gyk yz' j] k[gs vrk. ; k j ks ut yzxgzk nu; zu vgyy gxm' s kt zy
zu i ut yzx' i zuxy gt j ynu; nu; j kdg' rz gxm' s kt zy i gt hk' ykj α g i ut yzx' i zux zu kt ghrk
i rdkt z i uj k zu α αzαgro"k uhpki zy ' y α mg –gxdkz] ul gxm' s kt zy 1S k[z. ; k j oy' yy g yvki α r
s ks hkx l' t i zout i grrkj g j kyzx' i zux zngz αy vgz ul k–kx] i rgyy gt j α' ykj zu vkxluxs   zkx0
s α gzout nu' ykqkkvα m ut gt uhpki z hkluxk znk uhpki z αy j kyzxu] kj 1d k znkt j ks ut yzxgzk
znk uxj kx α ; ndi n i ut yzx' i zuxy gt j j kyzx' i zuxy gxk i grrkj . hki g' yk] u' x vxumxgs y"i uxxki z0
t kyy j kvkt j y ut ' y α mv xuvkx] α α' gro"kj uhpki zy zngz ng–k t uz] kz hkkt j kyzxu]kj 1

T' x rgyz k[gs vrk ul znk [knf i rgyy i gyk yz'j] ɑ znɔy i ngvzkx ynu; y g j gt nkxu' y vxu0 mxgs s ɑ mvxgi zɔi k ɑ ; nɔi n g s ks hkx l' t i zɔut xkz' xt y g xkl kxkt i k zu rskwbuf j gzg1 d k j ɔyi' yynu; znɔy hxkgqy znk kt i gvy' rgzɔut ul g i rgyy gt j grru; yi rɔkt z i u j k zu j ɔ kizr] g i i kyy gt uhpki z'y j gzg1a nɔy rgyz k[gs vrk ynu; y zngz uhpki z yul znk ygs k i rgyy i gt hk gyyɔmt kj zu ut k gt uznkx' yɑt mj klg' rz s ks hkx; ɔyk gyyɔmt s kt z. ; nɔi n i uv dkyz nk j gzg s ks hkxy ɑ znk uhpki z ut znk xɔmz yɔj k ul znk gyyɔmt s kt z ɑ zu znk i uxxkyvut j ɑ mj gzg s ks hkxy ul znk uhpki z ut znk rklz yɔj k ul znk gyyɔmt s kt z1a nk i ngvzkx i ut i r' j ky; ɑn g j ɔyi' yyɔut ul yulz0 ; gxk xk' yghɔɔz] 1

EM or1 Dreyy Deyma-. l 2

T' x loxyz k[gs vrk +I ɔnɔl B14—B16, i xkgzkyi rgyy [knf gt j g j xɔ-kxvxumxgs zngz zkyzy z nk i rgyyl f u' ''—kgrxkgj] i xkgzkj s gt] i rgyy ky ɑ znɔy huuq1N znɔy yki zɔut .; kxk—dk; s gt] ul znk i ut 0 i kvzy i u—kxkj ɑ F ngvzkx 6 gt j j ks ut yzxgzk gt ɔ vuxzgt z F - - yulz; gxk kt nɔt kkxɑt mi ut 0 i kvz ' yɑt mg vxkvxui kyyux; xgvvkx ɑ nkgj kx lɔ rkyzu vxk—kt z znk i u j ɑ ɑt znk nkgj kx lxus hkɑt mɔt i r' j kj ɑ zu znk ygs k yu' xi k i u j k lɔrk s uxk zngt ut i k1Yɑ i k g i rgyy i gt hk j kl ɑt kj ut r] ut i k. ' yɑt my' i n vxkvxui kyyux j ɔ ki zi zɔ-ky vxk—kt zy s ' rzovrk0j klɔ ɔzɔut kxxuxy1

```
2    // Hkh. ;.3< [knf.i
3    // Ffdmbsbukpo pg dmbtt [knf.
4    // Tfncfs gvodukpot bsf efgkofe ko [knf.drr
5
6    // rsfwfou nvmukrmf kodmvtkpot pg ifbefs gkmf
7    $kgoefg [NTG}M
8    $efgkof [NTG}M
9
     // [knf dmbtt efgkokukpo
21   dmbtt [knf
22
23   rvcmkd<
24      [knf*+= // dpotusvdups
25      wpke tfu[knf* kou0 kou0 kou += // tfu ipvs0 nkovuf boe tfdpoe
26      wpke rskou\okwfstbm*+= // rskou uknf ko vokwfstbm1uknf gpsnbu
27      wpke rskouauboebse*+= // rskou uknf ko tuboebse1uknf gpsnbu
28   rskwbuf<
29      kou ipvs= // 2 1 45 *461ipvs dmpdl gpsnbu+
2       kou nkovuf= // 2 1 7;
31      kou tfdpoe= // 2 1 7;
32    = // foe dmbtt [knf
33
34   $foekg
```

ɑnE H [knf u S vwyʺ '''' I

u nc tt I i lolɔls o

a nk i rgyy j klɑ ɔzɔut +I ɔnɔl B14, i ut zgɑ y vxuzuz] vky +ɑ ky 46—49, lux s ks hkx l' t i zɔut y [knf. tfu[knf. rskou\okwfstbm gt j rskouauboebse. gt j ɑ i r' j ky rskwbuf ɑ zkmkx s ks 0 hkxy ipvs. nkovuf gt j tfdpoe +ɑ ky 4A—53, 1 F rgyy [knf''y rskwbuf j gzg s ks hkxy i gt hk g i i kyykj ut r] h] ɔzylu' x s ks hkx l' t i zɔut y1 F ngvzkx 45 ɑ zxuj ' i ky g znɔxj g i i kyy yvki ɔ kx. rspufdufe. gy; k yz' j] ɑ nkxɔɔzgt i k gt j znk vgxz ɑ vrg] y ɑ uhpki z0uxdkt zkj vxumxgs s ɑ ml

uul Twanves s α n Tvei-α m ᛘ
tv n ivoy(is k vli ki oroy(, zul li   i luuuul o olv ts r(ts l α i   riuukl α oyα ts FUri l
r   l   lvw ovy,' lvl y l(:vl li(oy t rt iy lF

au -l evwn t nα mmα t n gym0e-αut   ᛘ
i   lrl ls y t i riuuwtzrk i!l #r ico!ow oroy(zs rluvoy is   l uvt!ls y iy y l
lrl ls y sllkw   r !ow oroy(Fe ouwui s ty lvl i url t y l uvos ourl t rl iwyuvo'orlnlF

N I on1 B14. znk i rgyy j klα αzout oy kt i ruykj α znk lurru; α m $)$, $p)$, $(np$--$(, $—$, k))$ $p,$ +rα ky 9. : gt j 56,C

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// rsfwfou nvmukrmf kodmvtkpot pg ifbefs gkmf
$kgoefg [NTG}M
$efgkof [NTG}M
    ...
$foekg
```

d nkt ; k h' α rj rgxmkx vxumrgs y. uznkx j klα αzout y gt j j ki rgxgzout y ; α r gryu hk vrgi kj α nkgj kx lα ky1 a nk vxki kj α mvxkvxui kyyux ; xgvvkx vxk–kt zy znk i uj k hkz; kkt **5o si1** +; nα n s kgt y d t uz j klα tkj , gt j **51sio** lxus hkα mα i r' j kj d znk t gs k [NTG}M ngy hkkt j klα tkj 1N] znk nkgj kx ngy t uz hkkt α i r' j kj vxk–α u' yr] α g lα rk. znk t gs k [NTG}M oy j klα tkj h] znk **5i1 os1** j α ki zo–k gt j znk nkgj kx lα ky zgzks kt zy gxk α i r' j kj 1N] znk nkgj kx ngy hkkt α i r' j kj vxk–α u' yr]. [NTG}M oy j klα tkj grxkgj] gt j znk nkgj kx lα ky oy t uz α i r' j kj gngα t 1Dzzks vzy zu α i r' j k g nkgj kx lα ks ' rzovrk zα s ky +α gj –kxzkt zr] , z] vα i grr] ui i ' x α rgxmk vxumrgs y ; α n s gt] nkgj kx lα ky zngz s g] znks ykr–ky α i r' j k uznkx nkgj kx lα ky1 *S tyl* a nk i us s ut r] ' ykj i ut –kt zα out lux znk y] s hurα i ut yzgt z t gs k α znk vxkvxui ky0 yux j α ki zo–ky oy yα s vr] znk nkgj kx lα ck t gs k α ' vvkx i gyk ; α n znk ' t j kxyi uxk i ngxgi zkx xkvrgi α mznk vkxαuj 1

wuuvᛘTvm0nt -αut b ov   ᛘ
g ul nr   o , n o r oi sk no r uvl uvt luvvkα l yd luyt tv i uvl uvt luvv' vi uulv
y i y uvl!ls yw liklv orl wvt   lα s nα rzklk tvl y i s ts l α i uvtnvi F

uul Twanves s α n Tvei-α m ᛘM
g ul y l s i   lt y l liklv orl α s zuulv iul' oy y l ulvα tk vluri lk (i s zs klvwtvl
α y l nr   o i sk no r ouvl uvt luvvkα l yd lut i   liklv orlF

un tt i i y oed so t

N I on1 B15. znk [knf i ut yzx' i zux +rα ky 43–46, α α zogro"ky znk j gzg s ks hkxy zu 3   znk' t α0 –kxygr0zα s k kw' o–grkt z ul 45 DR 1a noy kt y' xky zngz znk uhj ki z hkmα t y α g i ut yozkt z yzgzk1 N –grj –gr' ky i gt t uz hk yzuxkj α znk j gzg s ks hkxy ul g [knf uhj ki z. hki g' yk znk i ut 0 yzx' i zux oy i grrkj ; nkt znk [knf uhj ki z oy i xkgzkj . gt j grr y' hykw' kt z gzzks vzy h] g i rα kt z zu s uj d] znk j gzg s ks hkxy gxk yi x' zα o"kj h] ' ' t i zout tfu[knf +j oyi ' yykj ynuxzr], 1I α0 t grr). α "y α s vuxzgt z zu t uzk zngz]u' i gt j klα t k yk–kxgl u–kxrugj kj i ut yzx' i zux y lux g i rgyy1

a nk j gzg s ks hkxy ul g i rgyy i gt t uz hk α α zogro"kj ; nkxk znk] "xk j ki rgxkj α znk i rgyy huj] 1N] y' yzun mr] xki us s kt j kj zngz znk yk j gzg s ks hkxy hk α α zogro"kj h] znk i rgyy' y i ut 0 yzx' i zux +gy znkxk α y t u j klg' rz α α zogro"gzout lux ' ' t j gs kt zgr0z] vk j gzg s ks hkxy, 1G gzg s ks hkxy i gt gryu hk gyyα t kj –gr' ky h] [knf" y ul y l' t i zout y1 *S tyl* F ngvzkx 43 j ks ut 0

```
 2    // Hkh. ;.4< [knf.drr
 3    // Tfncfs1gvodukpo efgkokukpot gps dmbtt [knf.
 4    $kodmvef >kptusfbnA
 5    $kodmvef >kpnbokrA
 6    $kodmvef #[knf.i# // kodmvef efgkokukpo pg dmbtt [knf gspn [knf.i
 7    vtkoh obnftrbdf tue=
 8
 9    // [knf dpotusvdups kokukbmk ft fbdi ebub nfncfs up  fsp.
      // Gotvsft bmm [knf pc'fdut tubsu ko b dpotktufou tubuf.
21    [knf<<[knf*+
22
23       ipvs ? nkovuf ? tfdpoe ? 2=
24      // foe [knf dpotusvdups
25
26    // tfu of! [knf wbmvf vtkoh vokwfstbm uknf= fotvsf uibu
27    // uif ebub sfnbkot dpotktufou c  tfuukoh kowbmke wbmvft up  fsp
28    wpke [knf<<tfu[knf* kou i0 kou n0 kou t +
29
 2       ipvs ? * i A? 2 (( i > 46 + B i < 2= // wbmkebuf ipvs
31       nkovuf ? * n A? 2 (( n > 82 + B n < 2= // wbmkebuf nkovuf
32       tfdpoe ? * t A? 2 (( t > 82 + B t < 2= // wbmkebuf tfdpoe
33      // foe gvodukpo tfu[knf
34
35    // rskou [knf ko vokwfstbm1uknf gpsnbu *MM<TT<aa+
36    wpke [knf<<rskou\okwfstbm*+
37
38       dpvu >> tfugkmm*  2   + >> tfu!* 4 + >> ipvs >> #<#
39          >> tfu!* 4 + >> nkovuf >> #<# >> tfu!* 4 + >> tfdpoe=
 3      // foe gvodukpo rskou\okwfstbm
41
42    // rskou [knf ko tuboebse1uknf gpsnbu *MM<TT<aa DT ps XT+
43    wpke [knf<<rskouauboebse*+
44
45       dpvu >> * * ipvs ?? 2    ipvs ?? 34 + B 34 < ipvs & 34 + >> #<#
46          >> tfugkmm*  2   + >> tfu!* 4 + >> nkovuf >> #<# >> tfu!* 4 +
47          >> tfdpoe >> * ipvs > 34 B # DT# < # XT# +=
48      // foe gvodukpo rskouauboebse
```

σιΕ ΕΜ   [knf υ s   w t w.y u " vwy " " "   l

yzxgzky zngz ut r] g i rgyy"y tubukd dpotu j gzg s ks hkxy ul α zkmxgr ux fovn z] vky i gt hk α δ0
zogrό"kj α znk i rgyy"y huj] 1

Dus s ut Twunves s σt n wuw Η

*yyl   uyσs n yt σ oyαi ro)l i s ts -bcicr ki yi   l   lv t i ri uul uro oyn(σs y l ni uukl o-
s oyσts oui u(s yi   lvvt vF*

I ' t i zσut tfu[knf +rσ ky 4: —55, oy g rvcmkd l ' t i zσut zngz j ki rgxky znxkk kou vgxgs k0
zkxy gt j ' yky znks   zu ykz znk zσs k1 D i ut j σzσut gr k[vxkyyσut zkyzy kgi n gxm`s kt z zu j kzkx0
s α k; nkznkx znk —gr' k σy α g yvki dokj xgt mk1I ux k[gs vrk. znk ipvs —gr' k +rσ k 4B, s ' yz
hk mxkgzkx zngt ux kw' gr zu 3 gt j rkyy zngt 57. hki g' yk znk ' t σ—kxygr0zσs k luxs gz xkvxkykyt zy
nu' xy gy α zkmkxy lxus   3 zu 56 +klm1 4 UR oy nu' x 46 gt j 44 UR oy nu' x 56 s ϭ t σmnz oy
nu' x 3 gt j t uut oy nu' x 45,1Yσs σgxr]. huzn nkovuf gt j tfdpoe —gr' ky +rσ ky 53 gt j 54,

s ' yz hk mdkgzkx zngt ux kw' gr zu 3 gt j rkyy zngt 931Dt] —gr' ky u' zyoj k znkyk xgt nky gxk ykz zu "kxu zu kt y' xk zngzg [knf uhpki z gr; g] yi ut zga yi ut yoyzkt z j gzg   zngz oy. znk uhpki z"yj gzg —gr' ky gxkgr; g] yqkvza xgt nk. k—kt d znk—gr' kyvxu—oj kj gygxm's kt zy zu l' ti zaut tfu[knf ; kxk a i uxxki z1N znoy k[gs vrk. "kxu oy g i ut yoyzkt z —gr' k lux ipvs. nkovuf gt j tfdpoe1

D—gr' k vgyykj zu tfu[knf oy g i uxxki z—gr' k d oz"y a znk grru; kj xgt nk lux znks ks hkx oz"y a azgro"a m1Yu. gt] t ' s hkx a znk xgt nk 3—56 ; u' rj hk g i uxxki z—gr' k lux znk ipvs1 D i uxxki z—gr' k oy gr; g] y g i ut yoyzkt z —gr' k1Mu; k—kx. g i ut yoyzkt z —gr' k oy t uz t ki kyygxa] g i uxxki z—gr' k1N tfu[knf ykzy ipvs zu 2 hki g' yk znk gxm's kt z xki ko—kj ; gy u' z ul xgt nk. znkt ipvs oy i uxxki z ut r] d znk i ' xxkt z zoa k oy i ua i oj kt zgrr] s oj t amnz1

I ' ti zaut rskou\okwfstbm +ra ky 58—5B ul I am1B15, zgqky tu gxm's kt zy gt j u' zv' zy znk zoa k a ' t o—kxygr0zoa k luxs gz. i ut yoyza mul znxkk i urut 0ykvgxgzkj vgaxyul j amzyluxznk nu' x. s a ' zk gt j yki ut j 1I uxk[gs vrk. d znk zoa k; kxk 4C63C3: UR . l' ti zaut rskou\ok1 wfstbm ; u' rj xkz' xt 35<52<291Pa tk 5: ' yky vgxgs kzkxo"kj yzxkgs s gt a' rgzux **011 opp** zu yvki d] znk **ru nt k, knHb**, zngz oy j oy vrg]kj ; nkt gt a zkmkx oy u' zv' z a gldkrj ; oj kx zngt znk t ' s hkx ul j amoy a znk —gr' k1E] j klg' rz. znk lar i ngxgi zkxy gv vkgx zu znk rklz ul znk j amoy a znk t ' s hkx1N znoy k[gs vrk. d znk nkovuf —gr' k oy 5. a ; ar hk j oy vrg]kj gy 35. hki g' yk znk lar i ngxgi zkx oy ykz zu "kxu + 2 ,1N znk t ' s hkx hka mu' zv' z lary znk yki u ddkj ldkrj . znk lar i ngxgi zkx; ar t uz hk j oy vrg]kj 1T t i k znk lar i ngxgi zkx oy yvki u ddkj ; an tfu1 gkmm. a gv vrdky lux grr y' hykw' kt z —gr' ky zngz gxk j oy vrg]kj kj a ldkrj y; oj kx zngt znk —gr' k hka mj oy vrg]kj +olk1. tfugkmm oy g yza q]   ykzza m,1 a noy oy a i ut zxgyz zu tfu!. ; nan gv vrdky ut r] zu znk t k[z —gr' k j oy vrg]kj +tfu! oy g t ut yza q]   ykzza m1

wuuvATvn0nt -aut b ov EM

i yo p(ulyyas n;uz   i ui arr   i vi ylv tv rtiyas n-utas y uvl aats Awtzrk l vluytvlk yt gyuuvl! a tzuabyyas n' ls oy:us t rts nlvs llklkF i arzvl yt kt uv   i (vluzryas as tvvl yr(tv i yylk tzyuzy ri ylvas i uvtnvi F i uylv bj, dyvli   N uzyMTzyuzy, kouzuabw t' yt vlibyy l arr   i vi ylv is k uvl aats F

I ' ti zaut rskouauboebse +ra ky 65—6: , zgqky tu gxm's kt zy gt j u' zv' zy znk j gzk a yzgt j gxj 0zoa k luxs gz. i ut yoyza mul znk ipvs. nkovuf gt j tfdpoe —gr' ky ykvgxgzkj h] i urut y gt j lurru; kj h] gt DR ux UR a j a gzux +klm1 3<49<28 XT, 1Pa qk l' ti zaut rskou1 \okwfstbm. l' ti zaut rskouauboebse ' yky tfugkmm* 2 + zu luxs gz znk nkovuf gt j tfdpoe gy z; u j amoz —gr' ky; an rkgj a m"kxuy d t ki kyygx] 1Pa tk 67 ' yky znk i ut j azaut gr uvkxgzux +B<, zu j kzkxa a k znk—gr' k ul ipvs zu hk j oy vrg]kj   d znk ipvs oy 2 ux 34 +DR ux UR ,. a gv vkgxy gy 45 uznkx; oyk. znk ipvs gv vkgxy gy g—gr' k lxus   4 zu 441a nki i ut j a zaut gr uvkx0 gzux a ra k 69 j kzkxa a ky ; nkznkx DR ux UR ; ar hk j oy vrg]kj 1

I i lolo   i i y oeilsot   utl i vi i unctt I i lolilsomunctt es i

H—kt znu' mn g s ks hkx l' ti zaut j ki rgxkj a g i rgyy j klaz azaut s g] hk j klaz kj u' zyoj k zngz i rgyy j klaz azaut +gt j zdkj   zu znk i rgyy—og znk ha t gx] yi uvk xkyur' zaut uvkxgzux,. zngz s ks 0 hkx l' ti zaut oy yzarr; anat zngz **n k-- -n( ) p** olk1. azyt gs k oy qt u; t ut r] zu uznkx s ks hkxy ul znk i rgyy ' t rkyy xkldkxxkj zu —og gt uhpki z ul znk i rgyy. g xkldkxkt t i k zu gt uhpki z ul znk i rgyy. g vua zkx zu gt uhpki z ul znk i rgyy ux znk ha t gx] yi uvk xkyur' zaut uvkxgzux1d k'rr yg] s uxk ghu' z i rgyy yi uvk ynuxzr] 1

N g s ks hkx l' ti zaut oy j klaz kj a znk huj] ul g i rgyy j klaz azaut. znk i us varkx gzzks vzy vzy zu a ra k i grry zu znks ks hkx l' ti zaut 1Wks ks hkx zngz znk i us varkx xkykx—ky znk xamnz t uz zu a ra k gt] l' ti zaut 1

Tmwuvs et i mbov El

Dl os os ni   l   lv zs yots os uokl y l ri uukl os oyots os ns luy l   l   lv zs yots ;o y l   t uorl v   ttubuyt kt tvAFe ow is o uvt! l ulv tv is lF

au -l evvn t nct mmvct n gym0e-cut EM

Dl os os ni w irr l   lv zs yots os uokl y l ri uukl os oyots ktl us ty uvt tyl y l luy ut y' i ul ls nos llvos n, l izul rols yut y l ri uv' orr li rl yt ubl y l o url ls yi yots t y l zs yots , is k y l rols y tkl zuy lvl t uorl k o y l zs yots kl os oyots   is nluF

au -l evvn t nct mmvct n gym0e-cut EO

Ts r(y l w url uy is k tuy uyi rl l   lv zs yots w;olF,' tul o url ls yi yots wi vl zs roplr(yt is nlAwtzrk l kl os lk os y l ri uv li klvF

i i y oeils ot 'tAz ns cny oeils ot

a nk rskou\okwfstbm gt j rskouauboebse s ks hkx l' t izout y zgqk t u gxm's kt zy. hki g' yk znkyk s ks hkx l' t izout yos vroi or] qt u; zngz znk] "xk zu vxct z znk j gzg s ks hkxyul znk vgx0 zoi' rgx [knf uhpki z lux ; noi n znk] "xk ct –uqkj 1a noy i gt s gqk s ks hkx l' t izout i grrys uxk i ut i oyk zngt i ut –kt zout grl' t izout i grry ct vxui kj ' xgr vxumgs s ct nl

au -l evvn t nct mmvct n gym0e-cut EU

g uos n is t l y-tvols y lk uvtmvi   os n i uuvti   t yls uo urodw zs yots i mw (vlkz os ny l sz lvt ui vi lylvuFe ow ls l oyt t l y-tvols y lk uvtmvi   os nklvdlw vt y l i yy i yls i uuzri yos n ki yi l lvwi sk l lv zs yots w' oy os is t l y nol luy l l lv zs yots uy l von y yt i luy l ki yi l lvuF

au -l evvn t nct mmvct n gym0e-cut EF

l lv zs yots wi vl zuzi m(wtvyl v y is zs yots wos sts-t l y-tvols y lk uvtmvi w l izul y l ki yi uytvlk os ki yi l lvw i! l oklim(lls !i nokiylk (i tsuyvz ytv tv (l lv zs yots uy i yuytvl sl' ki yiFBl izul y l ki yi owi nvlik(os y l t l y, y l l lv- zs yots i mut yls i! l st i vnz ls yutv l' lvi vnz ls yuy is y(uo ir zs yots i mwos sts-t l y-tvols y lk ri s nzi nluFe zwy l i mui vl wtvylv,y l zs yots kl os oyots w i vl wtvylv is k y l zs yots uvtyty(ul ui vl wtvylvFe owo uvt! lw is (i uul yut uvtmvi kl! l rtu ls yF

wuuvvATvm0nt -cut bov EO

e l i yy i y l   lv zs yots i mwunls lvi m(yi pl loy lvs t i vnz ls yutv uz uyi s yoi rr(l' lvi vnz ls yuy is ts! ls yots ir zs yots i mwos sts-t l y-tvols y lk ri s nzi nluvvl- kz luy l roplr o ttk t ui uvos ny l' vts ni vnz ls yuy l' vts ny(ul uut i vnz ls yutv y l ' vts ns z lvt i vnz ls yuF

tlo un ctt

T t i k i rgyy [knf ngy hkkt j kl ct kj . ct i gt hk ' ykj gyg z] vk ct uhpki z. gxxg] . vu ct zkx gt j xkl 0 kxkt i k j ki rgxgzout y gy lurru; yC

```
[knf tvotfu= // pc'fdu pg u rf [knf
[knf bssb Vg[knfty 7 {= // bssb  pg 7 [knf pc'fdut
[knf (ekoofs[knf ? tvotfu= // sfgfsfodf up b [knf pc'fdu
[knf ,uknfXus ? (ekoofs[knf= // rpkoufs up b [knf pc'fdu
```

I cm̂ xk B16 ' yky i rgyy [knf1 Pα k 43 α yzgt zœgzky g yα mk uhpki z ul i rgyy [knf i gṁkj u1 d nkt znk uhpki z œy α yzgt zœgzkj . znk [knf i ut yzx' i zux œy i gṁkj zu α œœgrŏ"k kgi n rskwbuf j gzg s ks hkx zu 21a nkt . rα ky 47 gt j 49 vxα z znk zœs k α ' t œ–kxygr gt j yzgt j gxj luxs gzy. xkyv ki zœ–kr] . zu i ut lœs zngz znk s ks hkxy ; kxk α œœgrŏ"kj vxuv kxr] 1 Pα k 4A ykzy g t k; zœs k h] i gṁα ms ks hkx l' t i zœut tfu[knf. gt j rα ky 55 gt j 57 vxα z znk zœs k gngα α

```
 2   // Hkh. ;.5< gkh2;}25.drr
 3   // Xsphsbn up uftu dmbtt [knf.
 4   // UV[G< [ikt gkmf nvtu cf dpnrkmfe !kui [knf.drr.
 5   $kodmvef >kptusfbnA
 6   $kodmvef #[knf.i# // kodmvef efgkokukpo pg dmbtt [knf gspn [knf.i
 7   vtkoh obnftrbdf tue=
 8
 9   kou nbko*+

21      [knf u= // kotuboukbuf pc'fdu u pg dmbtt [knf
22
23      // pvurvu [knf pc'fdu u t kokukbm wbmvft
24      dpvu >> #[if kokukbm vokwfstbm uknf kt #=
25      u.rskou\okwfstbm*+= // 22<22<22
26      dpvu >> #zo[if kokukbm tuboebse uknf kt #=
27      u.rskouauboebse*+= // 34<22<22 DT
28
29      u.tfu[knf* 350 490 8 += // dibohf uknf
 2
31      // pvurvu [knf pc'fdu u t of! wbmvft
32      dpvu >> #zozo\okwfstbm uknf bgufs tfu[knf kt #=
33      u.rskou\okwfstbm*+= // 35<49<28
34      dpvu >> #zoauboebse uknf bgufs tfu[knf kt #=
35      u.rskouauboebse*+= // 3<49<28 XT
36
37      u.tfu[knf* ;;0 ;;0 ;; += // buufnru kowbmke tfuukoht
38
39      // pvurvu u t wbmvft bgufs trfdkg koh kowbmke wbmvft
 3      dpvu >> #zozoDgufs buufnrukoh kowbmke tfuukoht<#
41         >> #zo\okwfstbm uknf< #=
42      u.rskou\okwfstbm*+= // 22<22<22
43      dpvu >> #zoauboebse uknf< #=
44      u.rskouauboebse*+= // 34<22<22 DT
45      dpvu >> foem=
46   // foe nbko
```

```
[if kokukbm vokwfstbm uknf kt 22<22<22
[if kokukbm tuboebse uknf kt 34<22<22 DT

\okwfstbm uknf bgufs tfu[knf kt 35<49<28
auboebse uknf bgufs tfu[knf kt 3<49<28 XT

Dgufs buufnrukoh kowbmke tfuukoht<
\okwfstbm uknf< 22<22<22
auboebse uknf< 34<22<22 DT
```

σE EO i ' s   w u s [knfl

huzn luxs gzy1Pɑk 59 gzzks vzyzu'yk tfu[knf zu ykz znkj gzg s ks hkxy zu ɑ–grɔj –gr' ky l' t i zɑut tfu[knf xki umt ő"ky znɔy gt j ykzy znk ɑ –grɔj –gr' ky zu 3 zu s gɑ zgɑ znk uhɲki z ɑ g i ut yɔyzkt z yzgzk1 I ɑ grr]. rɑ ky 64 gt j 66 vxɑ z znk zɔs k gngɑ ɑ huzn luxs gzy1

ss lo D ic ʋs u s stlɪlso co ɑo i lʋɔoei

T lzkt . i rgyyky j u t uz ng–k zu hk i xkgzkj lxus yi xgzi n1 Wgznkx. znk] i gt ɑ i r' j k uhɲki zy ul uznkx i rgyyky gy s ks hkxy ux znk] s g] hk **op, uypo** lxus uznkx i rgyyky zngz vxu–ɔj k gzzxɔ0 h' zky gt j hkng–ɑuxy znk t; i rgyyky i gt 'yk1Y' i n yulz; gxk xk' yk i gt mxkgzr] kt ng t i k vxu0 j' i zɔ–ɑz] gt j yoɪ vrd] i uj k s gɑ zkt gt i k1 N i r' j ɑ mi rgyy uhɲki zy gy s ks hkxy ul uznkx i rgyyky ɔy i grrkj **n(w) (-uhɪ[' +ux kss, ps khɪ['**, gt j ɔy j ɔyi' yykj ɑ F ngvzkx 431 Gkxɔ–ɑ m t k; i rgyyky lxus k[ɔyzɑ mi rgyyky ɔy i grrkj **u̇ t p, uHɪ' np** gt j ɔy j ɔyi' yykj ɑ F ngvzkx 451

iev l i

Ukuvrk t k; zu uhɲki z0uxɔkt zkj vxumxgs s ɑ mulzkt y' vvuyk zngz uhɲki zys ' yz hkw' ɔxk rgxmk hki g' yk znk] i ut zgɑ t j gzg s ks hkxy gt j s ks hkx l' t i zɑut y1Punɔ i grr]. znɔy ɔy zxʼ k]uʼ s g] znɑ q ul uhɲki zy gy i ut zgɑ ɑ mj gzg gt j l' t i zɑut y +gt j uʼ x j ɔyi' yyɔut ngy i kxzgɑ r] kt i u' xgmkj znɔy –ɔk;, vn]yɔi grr]. nu; k–kx. znɔy ɔy t uz zxʼ k1

EO Dreyy ai uvmet l   i i myyɑt n Dreyy   ns gmvy

D i rgyy"y j gzg s ks hkxy +gxɔghɪrky j ki rgxkj ɑ znk i rgyy j kl ɑ ɔut, gt j s ks hkx l' t i zɑut y +l' t i zɑut y j ki rgxkj ɑ znk i rgyy j klɑ ɔut, hkrut mzu zngz i rgyy"y yi uvk1S ut s ks hkx l' t i 0 zɑut y gxk j klɑ kj gz mɪruhgr t gs kyvgi k yi uvk1

d ɑ znɑ g i rgyy"y yi uvk. i rgyy s ks hkxy gxk ɑs s kj ɔzkr] gi i kyyɔhrk h] grr ul zngz i rgyy"y s ks hkx l' t i zɑut y gt j i gt hk xklkxkt i kj h] t gs k1 T' zyɔj k g i rgyy"y yi uvk. rvcmk d i rgyy s ks hkxy gxk xklkxkt i kj znxu' mn ut k ul znk **t kʼ o p-** ut gt uhɲki z gt uhɲki z t gs k. g xkl0 kxkt i k zu gt uhɲki z ux g vɑ ɑ zkx zu gt uhɲki z1a nk z]vk ul znk uhɲki z. xklkxkt i k ux vɑ ɑ zkx yvki dd ky znk ɑ zkxdgi k +ɔlk1 znk s ks hkx l' t i zɑut y, gi i kyyɔhrk zu znk i rɑkt z1 d kʼrr ykk ɑ F ngvzkx 43 zngz gt ɑs vɑ ɑ ɑt gt j rk oy ɑ ykxzkj h] znk i us vɑrkx ut k–kx. xklkxkt i k zu g j gzg s ks hkx us s ks hkx l' t i zɑut lxus ; ɑ znɑ gt uhɲki z1

R ks hkx l' t i zɑut y ul g i rgyy i gt hk u–kxrugj kj . h' z ut r] h] uznkx s ks hkx l' t i zɑut y ul zngz i rgyy1a u u–kxrugj g s ks hkx l' t i zɑut . yoɪ vr] vxu–ɔj k ɑ znk i rgyy j klɑ ɑ zɑut g vxu0 zuz] vk lux kgi n –kxyɔut ul znk u–kxrugj kj l' t i zɑut . gt j vxu–ɔj k g ykvgxgzk l' t i zɑut j klɑ0 t ɑ zɑut lux kgi n –kxyɔut ul znk l' t i zɑut 1

c gxɔghɪrky j ki rgxkj ɑ gs ks hkx l' t i zɑut ng–k rui gr yi uvk gt j gxk qt u; t ut r] zu zngz l' t i zɑut 1 N gs ks hkx l' t i zɑut j klɑ ky g –gxɔghɪrk ; ɑn znk ygs k t gs k ky g yg g –gxɔghɪrk ; ɑn i rgyy yi uvk. znk i rgyy0yi uvk –gxɔghɪrk ɔy ngj j kt h] znk hrui q0yi uvk ɑ znk rui gr yi uvk1 Y' i n g nɔj j kt –gxɔghɪrk i gt hkgi i kyykj h] vxki ɔ kj ɑ mznk–gxɔghɪrk t gs k; ɑn znk i rgyy t gs k

lurru; kj h] znk yi uvk xkyur' zaut uvkxgzux +<<,1Mɷj j kt mruhgr –gxɷghrky i gt hk gi i kyykj
; ɷn znk ' t gx] yi uvk xkyur' zaut uvkxgzux +ykk F ngvzkx 9,1

a nk j uz s ks hkx ykrki zaut uvkxgzux +., ɷy vxki kj kj h] gt uhɷki z"y t gs k ux; ɷn g xkl0
kxkɷ i k zu gt uhɷki z zu gi i kyy znk uhɷki z"y s ks hkxy1a nk **k, , (—w pw np, -p pnHl(' ( ) p, kH{,**
 f ɷy vxki kj kj h] g vuɷ zkx zu gt uhɷki z zu gi i kyy znk uhɷki z"y s ks hkxyl

I ɷɴ'xk BⅠ7 ' yky g yɷ vrk i rgyy i grrkj Lpvou +rɷ ky: —57, ; ɷn rskwbuf j gzg s ks hkx
ul z] vk kou +rɷ k 56,. rvcmkd s ks hkx l' t i zaut tfuj +rɷ ky 44–47, gt j rvcmkd s ks hkx
l' t i zaut rskou +rɷ ky 4: —53, zu ɷr' yzxgzk gi i kyyɷ mi rgyy s ks hkxy; ɷn znk s ks hkx0ykrki 0
zaut uvkxgzuxy1I uxyɷ vrɷ iɷ].; k"–kɷ i r' j kj znɷyy s grr i rgyyɷ znk ygs k lɷɴk gynbko1Pɷ ky
5A–63 i xkgzk znxkk –gxɷghrky xkrgzkj zu z] vk Lpvou   dpvoufs +g Lpvou uhɷki z,. dpvoufsXus
+g vuɷ zkx zu g Lpvou uhɷki z, gt j dpvoufsSfg +g xklkxkɷ i k zu g Lpvou uhɷki z,1 c gxɷghrk
dpvoufsSfg xklkxy zu dpvoufs. gt j –gxɷghrk dpvoufsXus vuɷ zy zu dpvoufs1N rɷ ky 66–67
gt j 6: –6A. t uzk zngz znk vxumgs i gt ɷ –uqk s ks hkx l' t i zaut y tfuj gt j rskou h] ' yɷ m
znk j uz +., s ks hkx ykrki zaut uvkxgzux vxki kj kj h] kɷnkx znk t gs k ul znk uhɷki z +dpvoufs,
ux g xklkxkɷ i k zu znk uhɷki z +dpvoufsSfg. ; nɷ n ɷy gt grɷy lux dpvoufs,1Yɷ ɷgxr]. rɷ ky
74–75 j ks ut yzxgzk zngz znk vxumgs i gt ɷ –uqk s ks hkx l' t i zaut y tfuj gt j rskou h]
' yɷ mg vuɷ zkx +dpvouXus, gt j znk gxxu; +1A, s ks hkx0ykrki zaut uvkxgzux1

```
2    // Hkh. ;.6< gkh2;}26.drr
3    // Ffnpotusbukoh uif dmbtt nfncfs bddftt prfsbupst . boe 1A
4    $kodmvef >kptusfbnA
5    vtkoh obnftrbdf tue=
6
7    // dmbtt Lpvou efgkokukpo
8    dmbtt Lpvou
9
     rvcmkd< // rvcmkd ebub kt ebohfspvt
21       // tfut uif wbmvf pg rskwbuf ebub nfncfs
22       wpke tfuj* kou wbmvf +
23
24           ? wbmvf=
25        // foe gvodukpo tfuj
26
27       // rskout uif wbmvf pg rskwbuf ebub nfncfs
28       wpke rskou*+
29
2          dpvu >>   >> foem=
31       // foe gvodukpo rskou
32
33    rskwbuf<
34       kou   =
35    = // foe dmbtt Lpvou
36
37    kou nbko*+
38
39       Lpvou dpvoufs= // dsfbuf dpvoufs pc'fdu
3        Lpvou ,dpvoufsXus ? (dpvoufs= // dsfbuf rpkoufs up dpvoufs
41       Lpvou (dpvoufsSfg ? dpvoufs= // dsfbuf sfgfsfodf up dpvoufs
```

```
42
43      dpvu >> #afu    up 3 boe rskou vtkoh uif pc'fdu t obnf< #=
44      dpvoufs.tfuj* 3 += // tfu ebub nfncfs    up 3
45      dpvoufs.rskou*+= // dbmm nfncfs gvodukpo rskou
46
47      dpvu >> #afu    up 4 boe rskou vtkoh b sfgfsfodf up bo pc'fdu< #=
48      dpvoufsSfg.tfuj* 4 += // tfu ebub nfncfs    up 4
49      dpvoufsSfg.rskou*+= // dbmm nfncfs gvodukpo rskou
4
51      dpvu >> #afu    up 5 boe rskou vtkoh b rpkoufs up bo pc'fdu< #=
52      dpvoufsXus1Atfuj* 5 += // tfu ebub nfncfs    up 5
53      dpvoufsXus1Arskou*+= // dbmm nfncfs gvodukpo rskou
54   // foe nbko
```

```
afu   up 3 boe rskou vtkoh uif pc'fdu t obnf< 3
afu   up 4 boe rskou vtkoh b sfgfsfodf up bo pc'fdu< 4
afu   up 5 boe rskou vtkoh b rpkoufs up bo pc'fdu< 5
```

onE EU Suuw " ' s t"wu   w twy u " | ' | wsu| w y t"wu |s v w |w
t"wu   s w s wywwuw |w t"wu s v s " w |w t"wu l(is C yCl)

EU anveve-dt n t -mvei m vus   s vms nt-e-aut

N F ngvzkx 6. ; k hkmgt h] α i r' j α mg i rgyy"y j klα oxαut gt j s ks hkx0l' t i zαut j klα oxαut y α ut k lαrk1d k znkt j ks ut yzxgzkj ykv gxgzα mznoy i uj k α zu z; u lαrky   g nkgj kx lαrk lux znk i rgyy j klα oxαut +αlk1. znk i rgyy"y α zkxlgi k, gt j g yu' xi k i uj k lαrk lux znk i rgyy"y s ks hkx0 l' t i zαut j klα oxαut y +αlk1. znk i rgyy"y αs vrks kt zgzαut , 1 Wki grr zngz znoy s gqky αz kgydkx zu s uj d] vxumxgs y   gy lgx gy i rdkt zy ul g i rgyy gxk i ut i kxtkj . i ngt nky α znk i rgyy"y αs vrk0 s kt zgzαut j u t uz gllki z znk i rdkt z gy rut mgy znk i rgyy"y α zkxlgi k uxαmαt grr] vxu—qj kj zu znk i rdkt z xks gα t y ' t i ngt nkj 1

Di z' grr]. znα my gxk t uz w' αzk znoy xuy] 1 Mkgj kx lαrky j u i ut zgα yus k vuxzαut y ul znk αs vrks kt zgzαut gt j nαt zy ghu' z uznkxy1 Nrα α s ks hkx l' t i zαut y. lux k[gs vrk. ynu' rj hk α g nkgj kx lαrk. yu zngz ; nkt znk i us vαkx i us vαky g i rdkt z. znk i rdkt z i gt α i r' j k znk komkof l' t i zαut j klα oxαut α vrgi k1 D i rgyy"y rskwbuf s ks hkxy gxk royzkj α znk i rgyy j kl0 α oxαut α znk nkgj kx lαrk. yu znkyk s ks hkxy gxk —αydrrk zu i rdkt zy k—kt znu' mn znk i rdkt zy s g] t uz gi i kyy znk rskwbuf s ks hkxy1 N F ngvzkx 43. ; k ynu; nu; zu ' yk g vxu[] i rgyy zu nαj k k—kt znk rskwbuf j gzg ul g i rgyy lxus i rdkt zy ul znk i rgyy1

au -l ewn t nct mmvt n gymՁe-αut Ƀ

*N tv iyαts o utyyisyyt yl αsylvi l t i niuuwtzrk l α rzklk αs yl liklv αlF
N tv iyαts yiy' αrr lzubktsr(αsylusin(αs yl niuisk' αrrsty lsllklk (nαlsyw
t yl niuuwtzrk l α rzklk αs yl zsuz rαwlk utzvl αlFe αuαu(lyisty lvl i url
t yl uvα αurl t nliuyuvl αlnlF*

Ƀ iinyy .ti-αutyet l -αrα2 .ti-αuty

J nnp-- rl' nHƖ(' - igt xkgj uxj αyvrg] jgzg1Dt uznkx ius s ut ' yklux giikyyl't izαut yαyzu zkyz znk zx' zn uxlgryαz] ul iut jααut y y' in l't izαut ygxkulzkt igrrkj), pαunkHp rl' nHƖ(' -. Dt k[gs vrk ul g vxkj αigzk l't izαut ; u' rj hk gt ktGnru l't izαut lux gt] iut zgαkx irgyy g irgyyigvghrkul nurj α ms gt] uhpki zy. rαqk gwfdups1Dvxumxgs s αmnz zkyz ktGnr1 u hkluxkgzzks vzα mzu xkgj gt uznkx αzks lxus znk iut zgαkx uhpki z1Dt ktHvmm vxkj αigzk l't izαut s αmnz zkyz g iut zgα kxƠirgyy uhpki z zu j kzkxs αt k ; nkznkx αz ngy t u gj jααut gr xuus 1b ykl' r vxkj αigzk l't izαut ylux u' x[knf irgyys αmnz hk ktDT gt j ktXT1

a nk vxumxgs ul I αmy1Bl8—Bł jks ut yzxgzky znk tuzαut ul g ' zαrαz] l't izαut +gryu igrrkj gt p) p, rl' nHƖ(' ,1D' zαrαz] l't izαut αyt uz vgxz ul g irgyy' y rvcmkd α zkxlgi k xgznkx. α' y g rskwbuf s ks hkx l' t izαut zngz y' vvuxzy znk uvkxgzαut ul znk irgyy' y rvcmkd s ks hkx l' t izαut y1b zαrαz] l' t izαut y gxk t uz αt zkt jkj zu hk ' ykj h] i rdkt zy ul g irgyy +h' z igt hk ' ykj h] lxdkt j y ul g irgyy. gy; k' rr ykk α F ngvzkx 43,1

F rgyy abmftXfstpo +I αm1Bl8, j ki rgxkygt gxxg] ul 45 s ut znr] ygrky lαm' xky +rα k 4: , gt j znk vxuzuz] vky lux znk irgyy' y iut yzx' izux gt j s ks hkx l' t izαut y zngz s gt α' rgzk znk gxxg]1

```
2    // Hkh. ;.7< abmftXfstpo.i
3    // abmftXfstpo dmbtt efgkokukpo.
4    // Tfncfs gvodukpot efgkofe ko abmftXfstpo.drr.
5    $kgoefg aDRGaX}M
6    $efgkof aDRGaX}M
7
8    dmbtt abmftXfstpo
9
     rvcmkd<
21       tubukd dpotu kou npouitXfsqfbs ? 34= // npouit ko pof  fbs
22       abmftXfstpo*+= // dpotusvdups
23       wpke hfuabmftHspn\tfs*+= // korvu tbmft gspn lf cpbse
24       wpke tfuabmft* kou0 epvcmf += // tfu tbmft gps b trfdkgkd npoui
25       wpke rskouDoovbmabmft*+= // tvnnbsk f boe rskou tbmft
26    rskwbuf<
27       epvcmf upubmDoovbmabmft*+= // rspupu rf gps vukmku  gvodukpo
28       epvcmf tbmfty npouitXfsqfbs {= // 34 npouim  tbmft gkhvsft
29     = // foe dmbtt abmftXfstpo
2
31    $foekg
```

σnƉ Ƀ abmftXfstpo us vwɥ̈ ̈ ̈ l

N I αm1Bl9. znk abmftXfstpo iut yzx' izux +rα ky B—46, α αzαgrő̈ky gxxg] tbmft zu ̈kxu1 a nk rvcmkd s ks hkx l' t izαut tfuabmft +rα ky 63—6: , ykzy znk ygrky lαm' xk lux ut ks ut zn

α gxxg] tbmft1a nk rvcmkd s ks hkx l' t izαut rskouDoovbmabmft +rα ky 73—78, vxα zy znk zuzgr ygrky lux znk rgyz 45 s ut znyla nk rskwbuf ' zαα] l' t izαut upubmDoovbmabmft +rα ky 7A—89, zuzgry znk 45 s ut znr] ygrky lαn xky lux znk hkt klα ul rskouDoovbmabmft1R ks hkx l' t izαut rskouDoovbmabmft kj αy znk ygrky lαn xky α zu s ut kzgx] luxs gz1

```
 2    // Hkh. ;.8< abmftXfstpo.drr
 3    // abmftXfstpo dmbtt nfncfs1gvodukpo efgkokukpot.
 4    $kodmvef >kptusfbnA
 5    $kodmvef >kpnbokrA
 6    $kodmvef #abmftXfstpo.i# // kodmvef abmftXfstpo dmbtt efgkokukpo
 7    vtkoh obnftrbdf tue=
 8
 9    // kokukbmk f fmfnfout pg bssb  tbmft up 2.2
      abmftXfstpo<<abmftXfstpo*+
21
22      gps * kou k ? 2= k > npouitXfsqfbs= k-- +
23        tbmfty k { ? 2.2=
24      // foe abmftXfstpo dpotusvdups
25
26    // hfu 34 tbmft gkhvsft gspn uif vtfs bu uif lf cpbse
27    wpke abmftXfstpo<<hfuabmftHspn\tfs*+
28
29      epvcmf tbmftHkhvsf=
 2
31      gps * kou k ? 3= k >? npouitXfsqfbs= k-- +
32
33        dpvu >> #Goufs tbmft bnpvou gps npoui # >> k >> #< #=
34        dko AA tbmftHkhvsf=
35        tfuabmft* k0 tbmftHkhvsf +=
36      // foe gps
37    // foe gvodukpo hfuabmftHspn\tfs
38
39    // tfu pof pg uif 34 npouim  tbmft gkhvsft= gvodukpo tvcusbdut
 3    // pof gspn npoui wbmvf gps rsprfs tvctdskru ko tbmft bssb
41    wpke abmftXfstpo<<tfuabmft* kou npoui0 epvcmf bnpvou +
42
43      // uftu gps wbmke npoui boe bnpvou wbmvft
44      kg * npoui A? 3 (( npoui >? npouitXfsqfbs (( bnpvou A 2 +
45        tbmfty npoui 1 3 { ? bnpvou= // be'vtu gps tvctdskrut 2133
46      fmtf // kowbmke npoui ps bnpvou wbmvf
47        dpvu >> #Nowbmke npoui ps tbmft gkhvsf# >> foem=
48    // foe gvodukpo tfuabmft
49
 4    // rskou upubm boovbm tbmft *!kui uif ifmr pg vukmku  gvodukpo+
51    wpke abmftXfstpo<<rskouDoovbmabmft*+
52
53      dpvu >> tfursfdktkpo* 4 + >> gk fe
54        >> #zo[if upubm boovbm tbmft bsf< %#
55        >> upubmDoovbmabmft*+ >> foem= // dbmm vukmku  gvodukpo
56    // foe gvodukpo rskouDoovbmabmft
57
```

```
58     // rskwbuf vukmku  gvodukpo up upubm boovbm tbmft
59     epvcmf abmftXfstpo<<upubmDoovbmabmft*+
5
61        epvcmf upubm ? 2.2= // kokukbmk f upubm
62
63        gps * kou k ? 2= k > npouitXfsqfbs= k-- + // tvnnbsk f tbmft sftvmut
64           upubm -? tbmfty k {= // bee npoui k tbmft up upubm
65
66        sfuvso upubm=
67      // foe gvodukpo upubmDoovbmabmft
```

N I onl Bl: . tuzo i k zngz znk gvvroi gzout "y nbko l' t izout α ir' j ky ut r] g yos vrk ykw' kt i k ul s ks hkx0l' t izout igrry   znkxk gxk t u iut zxur yzgzks kt zyla nk rumoi ul s gt ov0 ' rgzα mznk tbmft gxxg] oy i us vrkzkr] kt igvy' rgzkj α irgyy abmftXfstpo"y s ks hkx l' t i 0 zout yl

```
2     // Hkh. ;.9< gkh2;}29.drr
3     // \ukmku  gvodukpo efnpotusbukpo.
4     // Lpnrkmf uikt rsphsbn !kui abmftXfstpo.drr
5
6     // kodmvef abmftXfstpo dmbtt efgkokukpo gspn abmftXfstpo.i
7     $kodmvef #abmftXfstpo.i#
8
9     kou nbko*+
21        abmftXfstpo t= // dsfbuf abmftXfstpo pc'fdu t
22
23        t.hfuabmftHspn\tfs*+= // opuf tknrmf tf vfoukbm dpef= uifsf bsf
24        t.rskouDoovbmabmft*+= // op dpouspm tubufnfout ko nbko
25      // foe nbko
```

```
Goufs tbmft bnpvou gps npoui 3<   x .
Goufs tbmft bnpvou gps npoui 4<   ~ ~.
Goufs tbmft bnpvou gps npoui 5<     .
Goufs tbmft bnpvou gps npoui 6<     .v
Goufs tbmft bnpvou gps npoui 7<     .
Goufs tbmft bnpvou gps npoui 8<     .
Goufs tbmft bnpvou gps npoui 9<     .~~
Goufs tbmft bnpvou gps npoui :<     .
Goufs tbmft bnpvou gps npoui ;<   v .
Goufs tbmft bnpvou gps npoui 32<  x~ .
```

```
Goufs tbmft bnpvou gps npoui 33<  v~ .
Goufs tbmft bnpvou gps npoui 34<  ~ . ~

[if upubm boovbm tbmft bsf< %82342.7;
```

σE Ej   m ““ y u“ vw   s “ I(is C yCI)

Eh   or l Dreyy Deyma-. l 2 Dut y-wi -uvy l o P me. r-vi. s nt -y

a nk vxumxgs   ul I ony1 B1A—B143 kt ngt i ky i rgyy [knf zu j ks ut yzxgzk nu; gxm̀s kt zygxk oʒ 0 vrʒi oʒr] vgyy kj zu g i ut yzx' i zux1 a nk i ut yzx' i zux j kl ʒ kj ʒ I on1 B15 ʒ ʒʒgrố'kj i pvs. nko1 vuf gt j tfdpoe zu 2 +olk1. s ʒj t omnz ʒ ' t o-kxygr zʒʒ k,1 Pʒqk uznkx l' t i zʒut y. i ut yzx' i zuxy i gt yvki d] j klg' rz gxm̀s kt zy1 Pʒ k 46 ul I on1 B1A j ki rgxky znk [knf i ut yzx' i zux zu ʒ ir' j k j klg' rz gxm̀s kt zy. yvki d] ʒ mg j klg' rz —gr' k ul “kxu lux kgi n gxm̀s kt z vgyy kj zu znk i ut 0 yzx' i zux1 Ǹ I on1 B1B. rʒ ky 43—46 j klʒ k znk t k; —kxyʒut ul znk [knf i ut yzx' i zux zngz xk0 i ko-ky —gr' ky lux vgxgs kzkxy is. nko gt j tfd zngz ; ʒr hk ' ykj zu ʒ ʒʒgrố'k rskwbuf j gzg s ks hkxy i pvs. nkovuf gt j tfdpoe. xkyvki zo-kr] 1 F rgyy [knf vxu—ʒj ky *uby* gt j *nly* l' t i zʒut y lux kgi n j gzg s ks hkx1 a nk [knf i ut yzx' i zux t u; i gny tfu[knf. ; nʒ i i gny znk tfuMpvs. tfuTkovuf gt j tfuafdpoe l' t i zʒut y zu —grʒj gzk gt j gyyʒmʒ —gr' ky zu znk j gzg s ks hkxy1 a nk j klg' rz gxm̀s kt zy zu znk i ut yzx' i zux kt y' xk zngz. k—kt ʒ t u —gr' ky gxk vxu—ʒj kj ʒ g i ut yzx' i zux i grr. znk i ut yzx' i zux yzʒrr ʒ ʒʒgrố'k znk j gzg s ks hkx zu s gʒ zgʒ znk [knf uh0 ʒki z ʒ g i ut yʒyzkt z yzgzk1 Di ut yzx' i zux zngz j klg' rzy grr ʒʒy gxm̀s kt zy oy gryu g j klg' rz i ut 0 yzx' i zux   olk1. g i ut yzx' i zux zngz i gt hk ʒ —uqkj ; ʒn t u gxm̀s kt zy1 a nkxk i gt hk gzʒ s uyz ut k j klg' rz i ut yzx' i zux vkx i rgyy1

```
 2    // Hkh. ;.:< [knf.i
 3    // [knf dmbtt dpoubkokoh b dpotusvdups !kui efgbvmu bshvnfout.
 4    // Tfncfs gvodukpot efgkofe ko [knf.drr.
 5
 6    // rsfwfou nvmukrmf kodmvtkpot pg ifbefs gkmf
 7    $kgoefg [NTG}M
 8    $efgkof [NTG}M
 9
      // [knf bctusbdu ebub u rf efgkokukpo
21    dmbtt [knf
22
23    rvcmkd<
24       [knf* kou ? 20 kou ? 20 kou ? 2 += // efgbvmu dpotusvdups
25
26       // tfu gvodukpot
27       wpke tfu[knf* kou0 kou0 kou += // tfu ipvs0 nkovuf0 tfdpoe
28       wpke tfuMpvs* kou += // tfu ipvs *bgufs wbmkebukpo+
29       wpke tfuTkovuf* kou += // tfu nkovuf *bgufs wbmkebukpo+
 2       wpke tfuafdpoe* kou += // tfu tfdpoe *bgufs wbmkebukpo+
31
32       // hfu gvodukpot
33       kou hfuMpvs*+= // sfuvso ipvs
```

σE E—   [knf u s   u s ““ ʒ s u   u   “| vwys   s ʒ   w I(is A yCI)

```
34      kou hfuTkovuf*+= // sfuvso nkovuf
35      kou hfuafdpoe*+= // sfuvso tfdpoe
36
37      wpke rskou\okwfstbm*+= // pvurvu uknf ko vokwfstbm1uknf gpsnbu
38      wpke rskouauboebse*+= // pvurvu uknf ko tuboebse1uknf gpsnbu
39   rskwbuf<
3       kou ipvs= // 2 1 45 *461ipvs dmpdl gpsnbu+
41      kou nkovuf= // 2 1 7;
42      kou tfdpoe= // 2 1 7;
43    = // foe dmbtt [knf
44
45   $foekg
```

σnE E—   [knf us u s " " ' s u   u   " | vw̄ys s '   w I(is C yCI)

N I ond B1B. ro t k 45 ul znk i ut yzx' i zux i gnys ks hkx l' t i zout tfu[knf ; œn znk –gr' ky vgyykj zu znk i ut yzx' i zux +ux znk j klg' rz –gr' ky, 1I ' t i zout tfu[knf i gny tfuMpvs zu kt y' xk zngz znk –gr' k y' vvrdkj lux ipvs œyœ znk xgt nk 3–56. znkt i gny tfuTkovuf gt j tfuafdpoe zu kt y' xk zngz znk –gr' ky lux nkovuf gt j tfdpoe gxk kgi n œ znk xgt nk 3–8B1N g –gr' k œy u' z ul xgt nk. zngz –gr' k œy ykz zu "kxu +zu kt y' xk zngz kgi n j gzg s ks hkx xks gœ yœ g i ut 0 yoyzkt z yzgzk, 1N F ngv zkx 49. H[i kvzout Mgt j ro t m. ; k' yk k[i kvzout y zu œ j œ i gzk ; nkt g –gr' k œy u' z ul xgt nk. xgznkx zngt yœ vr] gyyœnt œ mg j klg' rz i ut yoyzkt z –gr' k1

```
 2   // Hkh. ;.;< [knf.drr
 3   // Tfncfs1gvodukpo efgkokukpot gps dmbtt [knf.
 4   $kodmvef >kptusfbnA
 5   $kodmvef >kpnbokrA
 6   $kodmvef #[knf.i# // kodmvef efgkokukpo pg dmbtt [knf gspn [knf.i
 7   vtkoh obnftrbdf tue=
 8
 9   // [knf dpotusvdups kokukbmk ft fbdi ebub nfncfs up  fsp=
     // fotvsft uibu [knf pc'fdut tubsu ko b dpotktufou tubuf
21   [knf<<[knf* kou is0 kou nko0 kou tfd +
22
23     tfu[knf* is0 nko0 tfd += // wbmkebuf boe tfu uknf
24    // foe [knf dpotusvdups
25
26   // tfu of! [knf wbmvf vtkoh vokwfstbm uknf= fotvsf uibu
27   // uif ebub sfnbkot dpotktufou c  tfuukoh kowbmke wbmvft up  fsp
28   wpke [knf<<tfu[knf* kou i0 kou n0 kou t +
29
 2     tfuMpvs* i += // tfu rskwbuf gkfme ipvs
31     tfuTkovuf* n += // tfu rskwbuf gkfme nkovuf
32     tfuafdpoe* t += // tfu rskwbuf gkfme tfdpoe
33    // foe gvodukpo tfu[knf
34
35   // tfu ipvs wbmvf
36   wpke [knf<<tfuMpvs* kou i +
37
```

σnE E   [knf us   w t w.y u" vw̄y" " "   " u v" ' s u   u |s s–w s'   w I
(i s A yCI)

```
38       ipvs ? * i A? 2 (( i > 46 + B i < 2= // wbmkebuf ipvs
39     // foe gvodukpo tfuMpvs
3
41   // tfu nkovuf wbmvf
42   wpke [knf<<tfuTkovuf* kou n +
43
44     nkovuf ? * n A? 2 (( n > 82 + B n < 2= // wbmkebuf nkovuf
45     // foe gvodukpo tfuTkovuf
46
47   // tfu tfdpoe wbmvf
48   wpke [knf<<tfuafdpoe* kou t +
49
4       tfdpoe ? * t A? 2 (( t > 82 + B t < 2= // wbmkebuf tfdpoe
51     // foe gvodukpo tfuafdpoe
52
53   // sfuvso ipvs wbmvf
54   kou [knf<<hfuMpvs*+
55
56     sfuvso ipvs=
57     // foe gvodukpo hfuMpvs
58
59   // sfuvso nkovuf wbmvf
5    kou [knf<<hfuTkovuf*+
61
62     sfuvso nkovuf=
63     // foe gvodukpo hfuTkovuf
64
65   // sfuvso tfdpoe wbmvf
66   kou [knf<<hfuafdpoe*+
67
68     sfuvso tfdpoe=
69     // foe gvodukpo hfuafdpoe
6
71   // rskou [knf ko vokwfstbm1uknf gpsnbu *MM<TT<aa+
72   wpke [knf<<rskou\okwfstbm*+
73
74     dpvu >> tfugkmm*  2  + >> tfu!* 4 + >> hfuMpvs*+ >> #<#
75        >> tfu!* 4 + >> hfuTkovuf*+ >> #<# >> tfu!* 4 + >> hfuafdpoe*+=
76     // foe gvodukpo rskou\okwfstbm
77
78   // rskou [knf ko tuboebse1uknf gpsnbu *MM<TT<aa DT ps XT+
79   wpke [knf<<rskouauboebse*+
7
81     dpvu >> * * hfuMpvs*+ ?? 2    hfuMpvs*+ ?? 34 + B 34 < hfuMpvs*+ & 34 +
82        >> #<# >> tfugkmm*  2  + >> tfu!* 4 + >> hfuTkovuf*+
83        >> #<# >> tfu!* 4 + >> hfuafdpoe*+ >> * ipvs > 34 B # DT# < # XT# +=
84     // foe gvodukpo rskouauboebse
```

σnE E   [knf u s   w tw.y u " vw" " "   " u v " ' s u   u |s s—w s '   w I
(i s C yCl)

   a nk [knf i ut yzx' i zux i u' rj hk ; xœzkt zu α ir' j k znk ygs k yzgzks kt zy gy s ks hkx
l' t izaut tfu[knf0 ux k—kt znk α j o-ɔ' gr yzgzks kt zy α znk tfuMpvs. tfuTkovuf gt j tfu1
afdpoe l' t izaut y1F gnα mtfuMpvs. tfuTkovuf gt j tfuafdpoe lxus   znk i ut yzx' i zux s g]

hk yromnzr] s uxk kllɑ dkt z hki g' yk znk k[zxg i grr zu tfu[knf ; u' rj hk kroɑ gzkj 1Yoɑ ɑgxr].
i uv]ɑ mznk i uj k lxus rɑ ky 5: . 66 gt j 6Bɑ zu i ut yzx' i zux ; u' rj kroɑ gzk znk u–kxnkgj
ul i grrɑ mtfu[knf. tfuMpvs. tfuTkovuf gt j tfuafdpoe1F uj ɑ mznk [knf i ut yzx' i zux ux
s ks hkx l' t i zoɑt tfu[knf gy g i uv] ul znk i uj k ɑ rɑ ky 5: . 66 gt j 6B ; u' rj s gqk
s gɑ zkt gt i k ul znoy i rgyy s uxk j dlɑ' rz1N' znk oɑ vrks kt zgzoɑt y ul tfuMpvs. tfuTkovuf
gt j tfuafdpoe ; kxk zu i ngt nk. znk oɑ vrks kt zgzoɑt ul gt] s ks hkx l' t i zoɑt zngz j ' vrɑ0
i gzky rɑ ky 5: . 66 gt j 6B ; u' rj ng–k zu i ngt nk g i i uxj ɑ mr] 1Mg–ɑ mznk [knf i ut yzx' i zux
i grr tfu[knf gt j ng–ɑ mtfu[knf i grr tfuMpvs. tfuTkovuf gt j tfuafdpoe kt ghrky ' y zu
roɑ oɑ znk i ngt nky zu i uj k zngz –groj gzky znk ipvs. nkovuf ux tfdpoe zu znk i uxxkyvut j ɑ m
uby l' t i zoɑt 1 a noy xkj ' i ky znk rɑqkronuuj ul kxxuxy ; nkt grzkxɑ mznk i rgyy'y oɑ vrks kt zg0
zoɑt 1 Dryu. znk vkxluxs gt i k ul znk [knf i ut yzx' i zux gt j tfu[knf i gt hk kt ngt i kj h]
k[vrɑ i oɑr] j ki rgxɑ mznks komkof ux h] j klɑ ɑ mznks ɑ znk i rgyy j klɑ ozoɑt +; nɑ i n oɑ vrɑ 0
oɑr] ɑ rɑ ky znk l' t i zoɑt j klɑ ozoɑt , 1

au -I evɑn t nɑ mmɑt n gym0e-ɑut E
*Ni l   lv zs yɑts t i ri wi nvli k(uvt! oklui rr tv ui vy t y l zs yɑts i roy(vl zɑvlk
 (i ts yyvz ytv; tv ty lv l   lv zs yɑts At y l ri uv irry iy l   lv zs yɑts vt
 y l ts yyvz ytv; tv ty lv l   lv zs yɑts AFe ɑuvo uro ɑwy l i ɑsyls i s l t y l tkl
 i sk vlkz luy l roplvo ttk t i s lvvtvo y l o url lsyi yɑts t y l tkl ɑw tko ɑlkF ui
 nls lvi r uznl ! tok vluli yɑ n tklF*

au -I evɑn t nɑ mmɑt n gym0e-ɑut E G
*s(i snl yt y l kl i zry i vnz ls y! i rzl wt i zs yɑts vl zɑvl wy l rɑls y tkl yt l
 vl t uorlk ; yt ls uɑvl y i yy l uvt mvi yorr zs yɑts w tvvl yr(AF*

I ' t i zoɑt nbko ɑ I ɑn1Bl43 ɑ ɑzogro"ky lo–k [knf uhpki zy ut k ; ɑzn grr znxkk gxm's kt zy
j klg' rzkj ɑ znk oɑ vrɑ i ut yzx' i zux i grr +rɑ k B,. ut k ; ɑzn ut k gxm's kt z yvki ddkj +rɑ k
43,. ut k ; ɑzn z; u gxm's kt z yyvki ddkj +rɑ k 44,. ut k ; ɑzn znxkk gxm's kt zy yvki ddkj +rɑ k
45, gt j ut k ; ɑzn znxkk ɑ –groj gxm's kt z yyvki ddkj +rɑ k 46,1a nkt znk vxumɑgs j oy vrg]y
kgi n uhpki z ɑ ' t o–kxygr0zoɑ k gt j yzgt j gxj 0zoɑ k luxs gzy1

```
2    // Hkh. ;.32< gkh2;}32.drr
3    // Ffnpotusbukoh b efgbvmu dpotusvdups gps dmbtt [knf.
4    $kodmvef >kptusfbnA
5    $kodmvef #[knf.i# // kodmvef efgkokukpo pg dmbtt [knf gspn [knf.i
6    vtkoh obnftrbdf tue=
7
8    kou nbko*+
9
     [knf u3= // bmm bshvnfout efgbvmufe
21   [knf u4* 4 += // ipvs trfdkgkfe= nkovuf boe tfdpoe efgbvmufe
22   [knf u5* 430 56 += // ipvs boe nkovuf trfdkgkfe= tfdpoe efgbvmufe
23   [knf u6* 340 470 64 += // ipvs0 nkovuf boe tfdpoe trfdkgkfe
24   [knf u7* 490 960 ;; += // bmm cbe wbmvft trfdkgkfe
25
26   dpvu >> #Lpotusvdufe !kui<zozou3< bmm bshvnfout efgbvmufezo  #=
27   u3.rskou\okwfstbm*+= // 22<22<22
28   dpvu >> #zo  #=
```

```
29        u3.rskouauboebse*+= // 34<22<22 DT
2
31        dpvu >> #zozou4< ipvs trfdkgkfe= nkovuf boe tfdpoe efgbvmufezo   #=
32        u4.rskou\okwfstbm*+= // 24<22<22
33        dpvu >> #zo   #=
34        u4.rskouauboebse*+= // 4<22<22 DT
35
36        dpvu >> #zozou5< ipvs boe nkovuf trfdkgkfe= tfdpoe efgbvmufezo   #=
37        u5.rskou\okwfstbm*+= // 43<56<22
38        dpvu >> #zo   #=
39        u5.rskouauboebse*+= // ;<56<22 XT
3
41        dpvu >> #zozou6< ipvs0 nkovuf boe tfdpoe trfdkgkfezo   #=
42        u6.rskou\okwfstbm*+= // 34<47<64
43        dpvu >> #zo   #=
44        u6.rskouauboebse*+= // 34<47<64 XT
45
46        dpvu >> #zozou7< bmm kowbmke wbmvft trfdkgkfezo   #=
47        u7.rskou\okwfstbm*+= // 22<22<22
48        dpvu >> #zo   #=
49        u7.rskouauboebse*+= // 34<22<22 DT
4         dpvu >> foem=
51     // foe nbko
```

```
Lpotusvdufe !kui<

u3< bmm bshvnfout efgbvmufe
  22<22<22
  34<22<22 DT

u4< ipvs trfdkgkfe= nkovuf boe tfdpoe efgbvmufe
  24<22<22
  4<22<22 DT

u5< ipvs boe nkovuf trfdkgkfe= tfdpoe efgbvmufe
  43<56<22
  ;<56<22 XT

u6< ipvs0 nkovuf boe tfdpoe trfdkgkfe
  34<47<64
  34<47<64 XT

u7< bmm kowbmke wbmvft trfdkgkfe
  22<22<22
  34<22<22 DT
```

σnE Ɛ G   U   u   "| vw,s   s '   w   I(i s C yCI)

sυit i c lo uɪctt   ƐgpHɔo WpHy oeɭsotco usotv eυs

[knf"y *υby* gt j *nly* l' t izɑυt y gxk i gɪʧkj znxυ' nnυ' z znk i rgyy"y huj] 1N vgxzɑ' rgx. l' t izɑυt tfu[knf +rɑ ky 4: —55 ul I ɑn1 BℾB, i gɪʧy l' t izɑυt y tfuMpvs. tfuTkovuf gt j tfuafdpoe. gt j l' t izɑυt y rskou\okwfstbm gt j rskouauboebse i grr l' t izɑυt y hfuMpvs. hfuTkovuf gt j hfuafdpoe ɑ rɑ k 96—97 gt j rɑ ky: 3—÷5. xkyvɕ izɔ–kr] 1N kgi n i gyk. znkyk l' t izɑυt y i u' rj ng–k gi i kyykj znk i rgyy"y rskwbuf j gzg j ɑʧki zr] 1Mu; k–kx. i ut yɕj kx i ngt nɑt mznk xkv xkykt 0

zgzout ul znk zo k lxus znxkk kou –gr' ky ±xkw' oxot m45 h]zky ul s ks ux], zu g yot mrk kou –gr' k xkv xkykt zot mznk zuzgrt ' s hkx ul yki ut j y znz ng–k krgvykj yot i ks oj t omnz ±xkw' oxot m ut r] lu' x h]zky ul s ks ux],1N'; k s gj k y' in g in gt mk. ut r] znk huj dky ul znk l' t izout y znoz gi i kyy znk rskwbuf j gzg j oxki zr] ; u' rj t kkj zu i ngt mk ot vgxzoi' rgx. znk ot j o-gj' gr *uby* gt j *nly* l' t izout y lux znk ipvs. nkovuf gt j tfdpoe1a nkxk; u' rj hkt u t kkj zu s uj d] znk huj dky ul l' t izout y tfu[knf. rskou\okwfstbm ux rskouauboebse. hkig' yk znk] j u t uz gi i kyy znk j gzg j oxki zr] 1Gkyomt ot mznk i rgyy ot znoy s gt t kx xkj ' i ky znk roqkronuuj ul vxu0 mxgs s ot mkxxuxy; nkt grzkxot mznk i rgyy'' yot vrks kt zgzout 1

Yot orgxr]. znk [knf iut yzx' izux iu' rj hk; xozkt zu ot ir' j k g iuv] ul znk gvvxuvxogzk yzgzks kt zy lxus l' t izout tfu[knf1Guot myu s g] hk yromnzr] s uxk kllo i dkt z. hkig' yk znk k[zxg iut yzx' izux igrr gt j igrr zu tfu[knf gxk kros ot gzkj 1Mu; k–kx. j ' vroigzot myzgzks kt zy ot s ' rzovrk l' t izout y ux iut yzx' izux y s gqky i ngt not mznk i rgyy'' ot zkxt gr j gzg xkv xkykt zg0 zout s uxk j dloi' rz1Mg–ot mznk [knf iut yzx' izux igrr l' t izout tfu[knf j oxki zr] xkw' oxky gt] i ngt mky zu znk ot vrks kt zgzout ul tfu[knf zu hks gj k ut r] ut i k1

§ P my-wi -uvy

D *op-H,l nH{,* oy gt uznkx z] vk ul ywki ogr s ks hkx l' t izout 1a nk t gs k ul znk j kyzx' izux lux g i rgyy ot znk **Hop nt k, knH},** lurru; kj h] znk i rgyy t gs k] a noy t gs ot mi ut –kt zout ngy ot z' oxo-kgvvkgr. hki g' yk gy; k'' rr ykk ot g rgzkx i ngvzkx. znk zoj k uvkxgzux oy znk hoz; oy ki us 0 vrks kt z uvkxgzux. gt j . ot g ykt yk. znk j kyzx' izux oy znk i us vrks kt z ul znk iut yzx' izux1D j kyzx' izux oy ulzkt xkllkxxkj zu ; ot znk ghhxk–ogzout j zux ot znk rozkxgz' xk1d k vxkllkxt uz zu ' yk znoy ghhxk–ogzout 1

D i rgyy'' y j kyzx' izux oy i grrkj os vrói ozr] ; nkt gt uhpki z oy j kyzxu]kj 1a noy uii' xy. lux k[gs vrk. gy gt g' zus gzoi uhpki z oy j kyzxu]kj ; nkt vxumgs k[ki' zout rkg–ky znk yi uvk ot ; nói n zngz uhpki z; gy ot yzgt zogzkj 1e l klyuyz ytv oyubr ktlus ty i yzi rr(ul r liu by l t l yw l tv(ot vkxfluxs y **H},w ů kHl**(' t (1 -pvpp) ů s hkluxk znk uhpki z'' ys ks ux] oy xki rgos kj . yu znk s ks ux] s g] hk xk' ykj zu nurj t k; uhpki zy1

D j kyzx' izux xki io-ky t u vgxgs kzkxy gt j xkz' xt y t u –gr' k1D j kyzx' izux s g] t uz yvki i d] g xkz' xt z] vk t uz k–kt wpke1D i rgyy s g] ng–k ut k j kyzx' izux j kyzx' izux u–kxrugj ot mói t uz grru; kj 1D j kyzx' izux s '' yz hk rvcmkd1

H–kt znu' mn j kyzx' izux y ng–k t u t uz uz hkkt vxu–gj kj lux znk i rgyyky vxkykt zkj yu lgx. k–kx] i rgyy ngy g j kyzx' izux1N''] u' j u t uz k[vrói ozr] vxu–gj k g j kyzx' izux. znk i us vórkx i xkgzky gt ks vz] j kyzx' izux1 *Styl* d k'' rr ykk zngz y' in gt ot s vrói ozr] i xkgzkj j kyzx' izux j uky. ot lgi z. vkxfluxs ot os vuxzgt z z uvkxgzout y ut ' uhpki zy zngz gxk ixkgzkj znxu' mn i us vuyózout

+F ngvzkx 43, gt j ɑ nkxxɑzgt ik +F ngvzkx 45,1 N F ngvzkx 44. ; k"rr h' ɑrj j kyzx' izuxy gvvxu0 vxɑgzk lux i rgyyky ; nuyk uhɒki zy i ut zgɑ j] t gs ɑi grr] grrui gzkj s ks ux] +klm1 lux gxxg] y gt j yzxɑ ny, ux ' yk uznkx y]yzks xkyu' xi ky +klm1 lɑrky ut j ɑyq. ; nɑi n ; k yz' j] ɑ F ngvzkx 4: ,1 d k j ɑyi' yy nu; zu j] t gs ɑi grr] grrui gzk gt j j kgrrui gzk s ks ux] ɑ F ngvzkx 431

au -l ewn t nɑ mmvɑt n gymv0e-ɑut H l

w' l:mɑbl ɑs y l vl i ɑsklvt y l ttp, ts yyvz ytvui s k klyyvz ytvw i!l   z   nvliylv uvt ɑsls l ɑs   EE i s k t l y-tvɑls ylk uvt nvi   ɑs ny i s ɑuutuv nl yt ts !l(i ylvts r(tzv vɑ ɑs yvtkz yɑts lvlF

E—d nt Dut y-wi -uvy et l P my-wi -uvy   vn Dernl

F ut yzx' izuxy gt j j kyzx' izuxy gxk i grrkj ɑs vrɑiɑzr] h] znk i us vɑrkxl ɑ nk uxj kx ɑt ; nɑi n znkyk l' t izɑut i grsy ui i' xj kvɑt j y ut znk uxj kx ɑt ; nɑi n k[ki ' zɑut kt zkxs gt j rkg–ksy znk yi uvky ; nkxk znk uhɒki zy gxk ɑ ysgt zɑgzkd 1L kt kxgrr]. j kyzx' izux i grsy gxk s gj k ɑt znk xk0 –ksys uxj kx ul znk i uxxky vut j ɑ mi ut yzx' izux i grsy. h' z gsy; k"rr ykk ɑt I ɑny1 B144–B146. znk yzuxgmk i rg yyky ul uhɒki zy i gt grzkx znk uxj kx ɑt ; nɑi n j kyzx' izuxy gxk i grrkj 1

F ut yzx' izuxy gxk i grrkj lux uhɒki zy j klɑ kj ɑt mruhgr yi uvk hkluxk gt] uznkx l' t izɑut +ɑi ir' j ɑ mnbko, ɑt zngz lɑrk hkmɑt y k[ki ' zɑut +grznu' mn znk uxj kx ul k[ki ' zɑut ul mruhgr uhɒki z i ut yzx' izuxy hkz; kkt lɑrky ɑy t uz m' gxgt zkkj ,1 ɑ nk i uxxkyvut j ɑ mj kyzx' izuxy gxk i grrkj ; nkt nbko zkxs ɑ gzky1 I ' t izɑut **l o1** luxi ky g vxumxgs zu zkxs ɑ gzk ɑs s kj ɑgzkr] gt j j uky t uz k[ki ' zk znk j kyzx' izuxy ul g' zus gzɑ uhɒki zy1 ɑ nk l' t izɑut ulzkt ɑy ' ykj zu zkxs ɑ gzk g vxumxgs ; nkt gt kxxux ɑy j kzki zkj ɑt znk ɑ t v' z ux d g lɑrk zu hk vxui kyykj h] znk vxumxgs i gt t uz hk uvkt kj 1I ' t izɑut **d t-1** vkxluxs s yyɑ ɑgxr] zu l' t izɑut f ku h' z luxi ky znk vxumxgs zu zkxs ɑ gzk ɑs s kj ɑgzkr]. ; ɑznu' z grru; ɑt mznk j kyzx' izuxy ul gt] uhɒki zy zu hk i grrkj 1I ' t izɑut bcpsu ɑy' y' grr] ' ykj zu ɑ j ɑ gzk gt ght uxs gr zkxs ɑ gzɑut ul znk vxumxgs 1+Ykk D vvkt j ɒ I . lux s uxk ɑ luxs gzɑut ut l' t izɑut y f ku gt j bcpsu1,

ɑ nk i ut yzx' izux lux gt g' zus gzɑi rui gr uhɒki z ɑy i grrkj ; nkt k[ki ' zɑut xkgi nky znk vuɑ z ; nkxk zngz uhɒki z ɑy j klɑ kj   znk i uxxkyvut j ɑ mj kyzx' izux ɑy i grrkj ; nkt k[ki ' zɑut rkg–ksy znk uhɒki z"y yi uvk +ɒk1. znk hrui q ɑt ; nɑi n zngz uhɒki z ɑy j klɑ kj   ngy lɑt ɑynkj k[ki0 ' zɑ zɑ m,1F ut yzx' izuxy gt j j kyzx' izuxy lux g' zus gzɑi uhɒki zy gxk i grrkj kgi n zɑs k k[ki ' zɑut kt zkxy gt j rkg–ksy znk yi uvk ul znk uhɒki z1G kyzx' izuxy gxk t uz i grrkj lux g' zus gzɑi uhɒki zy d znk vxumxgs zkxs ɑ gzky ; ɑn g i grr zu l' t izɑut f ku ux l' t izɑut bcpsu1

ɑ nk i ut yzx' izux lux g tubukd ruɑ gr uhɒki z ɑy i grrkj ut r] ut ik. ; nkt k[ki ' zɑut lɑxyz xkgi nky znk vuɑ z ; nkxk zngz uhɒki z ɑy j klɑ kj   znk i uxxkyvut j ɑ mj kyzx' izux ɑy i grrkj ; nkt nbko zkxs ɑ gzky ux znk vxumxgs i grsy l' t izɑut f ku ux l' t izɑut bcpsu1 L ruhgr gt j tubukd uhɒki zy gxk j kyzxu]kj ɑt znk xk–kxyk uxj kx ul znkɑx i xkgzɑut 1G kyzx' izuxy gxk t uz i grrkj lux tubukd uhɒki zy d znk vxumxgs zkxs ɑ gzky ; ɑn g i grr zu l' t izɑut bcpsu1

ɑ nk vxumxgs s ul I ɑny1 B144–B146 j ks ut yzxgzky znk uxj kx ɑt ; nɑi n i ut yzx' izuxy gt j j kyzx' izuxy gxk i grrkj lux uhɒki zy ul i rgyy LsfbufDoeFftusp +I ɑnt1 B144 gt j I ɑnt1 B145, ul –gxɑu' y yzuxgmk i rgyyky ɑt yk–kxgr yi uvky1Hgi n uhɒki z ul i rgyy LsfbufDoeFftusp i ut zgɑ y gt ɑ zkmkx +pc'fduNF, gt j g tuskoh +nfttbhf, zngz gxk ' ykj ɑt znk vxumxgs "y u' zv' z zu ɑ j kt zɑ] znk uhɒki z +I ɑnt1 B144 rɑt ky 49—4: ,1a noy s ki ngt ɑ gr k[gs vrk ɑy v' xkr] lux vkj g0 munɑi v' xvuyky1I ux znɑy xkgyut . rɑt k 54 ul znk j kyzx' izux ɑ I ɑnt1 B145 j kzkxs ɑ ky ; nkznkx znk uhɒki z hkɑ mj kyzxu]kj ngy gt pc'fduNF –gr' k 3 ux 8 gt j . d yu. u' zv' z zy g t k; rɑt k ɑ ngx0 gi zkx1a noy rɑt k s gqky znk vxumxgs "y u' zv' z kgyɑkx zu lurru; 1

```
 2   // Hkh. ;.33< LsfbufDoeFftusp .i
 3   // LsfbufDoeFftusp  dmbtt efgkokukpo.
 4   // Tfncfs gvodukpot efgkofe ko LsfbufDoeFftusp .drr.
 5   $kodmvef >tuskohA
 6   vtkoh obnftrbdf tue=
 7
 8   $kgoefg LSGD[G}M
 9   $efgkof LSGD[G}M

21   dmbtt LsfbufDoeFftusp

22

23   rvcmkd<
24      LsfbufDoeFftusp * kou0 tuskoh += // dpotusvdups
25       LsfbufDoeFftusp *+= // eftusvdups
26   rskwbuf<
27      kou pc'fduNF= // NF ovncfs gps pc'fdu
28      tuskoh nfttbhf= // nfttbhf eftdskckoh pc'fdu
29    = // foe dmbtt LsfbufDoeFftusp
 2
31   $foekg
```

σE Ƀ l   LsfbufDoeFftusp us vwy̎ "" l

```
 2   // Hkh. ;.34< LsfbufDoeFftusp .drr
 3   // LsfbufDoeFftusp  dmbtt nfncfs1gvodukpo efgkokukpot.
 4   $kodmvef >kptusfbnA
 5   $kodmvef #LsfbufDoeFftusp .i#// kodmvef LsfbufDoeFftusp  dmbtt efgkokukpo
 6   vtkoh obnftrbdf tue=
 7
 8   // dpotusvdups
 9   LsfbufDoeFftusp <<LsfbufDoeFftusp * kou NF0 tuskoh nfttbhfauskoh +

21      pc'fduNF ? NF= // tfu pc'fdu t NF ovncfs
22      nfttbhf ? nfttbhfauskoh= // tfu pc'fdu t eftdskrukwf nfttbhf
23
24      dpvu >> #Vc'fdu # >> pc'fduNF >> #   dpotusvdups svot    #
25         >> nfttbhf >> foem=
26    // foe LsfbufDoeFftusp  dpotusvdups
27
28   // eftusvdups
29   LsfbufDoeFftusp << LsfbufDoeFftusp *+
 2
31      // pvurvu of!mkof gps dfsubko pc'fdut= ifmrt sfbebckmku
32      dpvu >> * pc'fduNF ?? 3    pc'fduNF ?? 8 B #zo# < ## +=
33
34      dpvu >> #Vc'fdu # >> pc'fduNF >> #   eftusvdups svot    #
35         >> nfttbhf >> foem=
36    // foe  LsfbufDoeFftusp  eftusvdups
```

σE Ƀ M   LsfbufDoeFftusp us   w tw.y u" vwy̎ "" l

I cm xk B146 j klœ ky uhɲki z gkstu +rœ k 43, œ mruhgr yi uvk1 Ny i ut yzx' i zux œy gi z' grr]
i gɱkj hkluxk gt] yzgzks kœ zy œ nbko k[ki' zk gt j œyj kyzx' i zux œy i gɱkj gz vxumœgs zkxs œ0
t gzœut glzkx znk j kyzx' i zuxy lux grr uznkx uhɲki zy ng–k x' t 1

I ' t i zɑut nbko +ɑt ky 45–56, j ki rgxky znxkk uhɕki zy1 T hɕki zy tfdpoe +ɑt k 48, gt j gpvsui +ɑt k 54, gxk rui gr g' zus gzɑi uhɕki zy. gt j uhɕki z uikse +ɑt k 49, ɕy g tubukd rui gr uhɕki z1a nk i ut yzx' i zux lux kgi n ul znkyk uhɕki zy ɕy i gɕɕkj ; nkt k[ki ' zɑut xkgi nky znk vuɑ z ; nkxk zngz uhɕki z ɕy j ki rgxkj 1a nk j kyzx' i zuxy lux uhɕki zy gpvsui znkt tfdpoe gxk i gɕɕkj +ɑlk1. znk xk–kxyk ul znk uxj kx ɑ ; nɑi n znkɑx i ut yzx' i zuxy ; kxk i gɕɕkj , ; nkt k[ki ' zɑut xkgi nky znk kt j ul nbko1Ekig' yk uhɕki z uikse ɕy tubukd. ɑ k[ɕyzy ' t zɑr vxumɕgs zkxs ɑ g0 zɑut 1a nk j kyzx' i zux lux uhɕki z uikse ɕy i gɕɕkj hkluxk znk j kyzx' i zux lux mɑuhgr uhɕki z gkstu. h' z glzkx grr uznkx uhɕki zy gxk j kyzxu]kj 1

I ' t i zɑut dsfbuf +ɑt ky 59–66, j ki rgxky znxkk uhɕki zy gkgui +ɑt k 5B, gt j tfwfoui +ɑt k 64, gy rui gr g' zus gzɑi uhɕki zy. gt j tk ui +ɑt k 63, gy g tubukd rui gr uhɕki z1a nk j kyzx' i zuxy lux uhɕki zy tfwfoui znkt gkgui gxk i gɕɕkj +ɑlk1. znk xk–kxyk ul znk uxj kx ɑ ; nɑi n znkɑx i ut yzx' i zuxy ; kxk i gɕɕkj , ; nkt dsfbuf zkxs ɑ gzky1Eki g' yk tk ui ɕy tubukd. ɑ k[ɕyzy ' t zɑr vxumɕgs zkxs ɑ gzɑut 1a nk j kyzx' i zux lux tk ui ɕy i gɕɕkj hkluxk znk j kyzx' i zuxy lux uikse gt j gkstu. h' z glzkx grr uznkx uhɕki zy gxk j kyzxu]kj 1

```
2    // Hkh. ;.35< gkh2;}35.drr
3    // Ffnpotusbukoh uif psefs ko !ikdi dpotusvdupst boe
4    // eftusvdupst bsf dbmmfe.
5    $kodmvef >kptusfbnA
6    $kodmvef #LsfbufDoeFftusp .i# // kodmvef LsfbufDoeFftusp  dmbtt efgkokukpo
7    vtkoh obnftrbdf tue=
8
9    wpke dsfbuf* wpke += // rspupu rf

21   LsfbufDoeFftusp  gkstu* 30 #*hmpcbm cfgpsf nbko+# += // hmpcbm pc'fdu
22
23   kou nbko*+
24
25      dpvu >> #zoTDNU H\UL[NVU< GjGL\[NVU EGINUa# >> foem=
26      LsfbufDoeFftusp  tfdpoe* 40 #*mpdbm bvupnbukd ko nbko+# +=
27      tubukd LsfbufDoeFftusp  uikse* 50 #*mpdbm tubukd ko nbko+# +=
28
29      dsfbuf*+= // dbmm gvodukpo up dsfbuf pc'fdut
2
31      dpvu >> #zoTDNU H\UL[NVU< GjGL\[NVU SGa\TGa# >> foem=
32      LsfbufDoeFftusp  gpvsui* 60 #*mpdbm bvupnbukd ko nbko+# +=
33      dpvu >> #zoTDNU H\UL[NVU< GjGL\[NVU GUFa# >> foem=
34   // foe nbko
35
36   // gvodukpo up dsfbuf pc'fdut
37   wpke dsfbuf* wpke +
38
39      dpvu >> #zoLSGD[G H\UL[NVU< GjGL\[NVU EGINUa# >> foem=
3       LsfbufDoeFftusp  gkgui* 70 #*mpdbm bvupnbukd ko dsfbuf+# +=
41      tubukd LsfbufDoeFftusp  tk ui* 80 #*mpdbm tubukd ko dsfbuf+# +=
42      LsfbufDoeFftusp  tfwfoui* 90 #*mpdbm bvupnbukd ko dsfbuf+# +=
43      dpvu >> #zoLSGD[G H\UL[NVU< GjGL\[NVU GUFa# >> foem=
44   // foe gvodukpo dsfbuf
```

```
Vc'fdu 3    dpotusvdups svot    *hmpcbm cfgpsf nbko+

TDNU H\UL[NVU< GjGL\[NVU EGINUa
Vc'fdu 4    dpotusvdups svot    *mpdbm bvupnbukd ko nbko+
Vc'fdu 5    dpotusvdups svot    *mpDBM tubukd ko nbko+

LSGD[G H\UL[NVU< GjGL\[NVU EGINUa
Vc'fdu 7    dpotusvdups svot    *mpdbm bvupnbukd ko dsfbuf+
Vc'fdu 8    dpotusvdups svot    *mpdbm tubukd ko dsfbuf+
Vc'fdu 9    dpotusvdups svot    *mpdbm bvupnbukd ko dsfbuf+

LSGD[G H\UL[NVU< GjGL\[NVU GUFa
Vc'fdu 9    eftusvdups svot     *mpdbm bvupnbukd ko dsfbuf+
Vc'fdu 7    eftusvdups svot     *mpdbm bvupnbukd ko dsfbuf+

TDNU H\UL[NVU< GjGL\[NVU SGa\TGa
Vc'fdu 6    dpotusvdups svot    *mpdbm bvupnbukd ko nbko+

TDNU H\UL[NVU< GjGL\[NVU GUFa
Vc'fdu 6    eftusvdups svot     *mpdbm bvupnbukd ko nbko+
Vc'fdu 4    eftusvdups svot     *mpdbm bvupnbukd ko nbko+

Vc'fdu 8    eftusvdups svot     *mpdbm tubukd ko dsfbuf+
Vc'fdu 5    eftusvdups svot     *mpdbm tubukd ko nbko+

Vc'fdu 3    eftusvdups svot     *hmpcbm cfgpsf nbko+
```

σE Ⱶ O   h vw " | ü| u   u   s v vw   u   s wus wI(i s   C yCl)

E   or l Dreyy Deyma-. l 2   a. g-rmb vev   Wh. w d: n e Whnwxt i m-u e #-o d1l Pe-e   ns gmw

D xkllkxkt i k zu gt uhpki z ay gt grayy lux znk t gs k ul znk uhpki z gt j . nkt i k. s g] hk ' ykj ut znk rklz yaj k ul gt gyyant s kt z yzgzks kt z1Ⱶ znay i ut zk[z. znk xkllkxkt i k s gqky g vkxlki zr] gi i kvzghrk rʹ i rz l zngz i gt xkiko–k g –grʹ k1T t k ; g] zu ʹ yk znay i gv gharaz] +ʹ t luxzʹ t gzkrʹ], ay zu ng–kg rvcmkd s ks hkx lʹ t i zaut ul g i rgyy xkzʹ xt g xkllkxkt i k zu g rskwbuf j gzg s ks 0 hkx ul zngz i rgyy1Ⱶ g lʹ t i zaut xkzʹ xt y g dpotu xkllkxkt i k. zngz xkllkxkt i k i gt t uz hk ʹ ykj gy g s uj daghrk rʹ i rz l1

a nk vxumxgs   ul I any1B147—B149 ʹ ykyg yos vrddkj [knf irgyy +I an1B147 gt j I an1B148, zu j ks ut yzxgzk xkzʹ xt α mg xkllkxkt i k zu g rskwbuf j gzg s ks hkx ; an s ks hkx lʹ t i zaut cbeafuMpvs +j k irgxkj α I an1B147 α ra t k 48 gt j j kla t kj α I an1B148 α ra t ky 5: –64,1 Yʹ i n g xkllkxkt i k xkzʹ xt gizʹ grr] s gqky g i grr zu s ks hkx lʹ t i zaut cbeafuMpvs gt grayy lux rskwbuf j gzg s ks hkx ipvs! a nk lʹ t i zaut i grr i gt hk ʹ ykj α gt] ; g] zngz znk rskwbuf j gzg s ks hkx i gt hk ʹ ykj . α i rʹ j α mg ygt rʹ i rz l α gt gyyant s kt z yzgzks kt z. zn ʹ yls i   ns n rols yut y l ri uwyt nt   lv y l ri uaw #r i co ki yi iy ʹ on. a nk ygs k vxuhrks ; u ʹ rj ui i ʹ x d g vua zkx zu znk rskwbuf j gzg ; kxk zu hk xkzʹ xt kj h] znk lʹ t i zaut 1

```
2   // Hkh. ;.36< [knf.i
3   // [knf dmbtt efdmbsbukpo.
4   // Tfncfs gvodukpot efgkofe ko [knf.drr
5
```

σE Ⱶ Ʉ   [knf us   vwus s "   I(i s   A yCl)

```
 6    // rsfwfou nvmukrmf kodmvtkpot pg ifbefs gkmf
 7    $kgoefg [NTG}M
 8    $efgkof [NTG}M
 9
      dmbtt [knf
21
22    rvcmkd<
23       [knf* kou ? 20 kou ? 20 kou ? 2 +=
24       wpke tfu[knf* kou0 kou0 kou +=
25       kou hfuMpvs*+=
26       kou (cbeafuMpvs* kou += // FDUIGSV\a sfgfsfodf sfuvso
27    rskwbuf<
28       kou ipvs=
29       kou nkovuf=
 2       kou tfdpoe=
31     = // foe dmbtt [knf
32
33    $foekg
```

```
 2    // Hkh. ;.37< [knf.drr
 3    // [knf dmbtt nfncfs1gvodukpo efgkokukpot.
 4    $kodmvef #[knf.i# // kodmvef efgkokukpo pg dmbtt [knf
 5
 6    // dpotusvdups gvodukpo up kokukbmk f rskwbuf ebub= dbmmt nfncfs gvodukpo
 7    // tfu[knf up tfu wbskbcmft= efgbvmu wbmvft bsf 2 *tff dmbtt efgkokukpo+
 8    [knf<<[knf* kou is0 kou nko0 kou tfd +
 9

        tfu[knf* is0 nko0 tfd +=
21      // foe [knf dpotusvdups
22

23    // tfu wbmvft pg ipvs0 nkovuf boe tfdpoe
24    wpke [knf<<tfu[knf* kou i0 kou n0 kou t +
25

26       ipvs ? * i A? 2 (( i > 46 + B i < 2= // wbmkebuf ipvs
27       nkovuf ? * n A? 2 (( n > 82 + B n < 2= // wbmkebuf nkovuf
28       tfdpoe ? * t A? 2 (( t > 82 + B t < 2= // wbmkebuf tfdpoe
29      // foe gvodukpo tfu[knf
 2
31    // sfuvso ipvs wbmvf
32    kou [knf<<hfuMpvs*+
33

34       sfuvso ipvs=
35      // foe gvodukpo hfuMpvs
36
37    // XVVS XSDL[NLG< Sfuvsokoh b sfgfsfodf up b rskwbuf ebub nfncfs.
38    kou ([knf<<cbeafuMpvs* kou ii +
39

 3       ipvs ? * ii A? 2 (( ii > 46 + B ii < 2=
41       sfuvso ipvs= // FDUIGSV\a sfgfsfodf sfuvso
42      // foe gvodukpo cbeafuMpvs
```

I oṁxk B149 j ki rgxky [knf uhṕki z u +rσ k 43, gt j xklkxkt i k ipvsSfg +rσ k 46,. ; nɑi n σy σ σσgrŏkj ; σn znk xklkxkt i k xkz' xt kj h] znk i grr u.cbeafuMpvs*42+1Pσ k 48 j σyvrg] y znk –gr' k ul znk grσy ipvsSfg1a nσy ynu; ynu; ipvsSfg hxkgqy znk kt i gvy' rgzσut ul znk i rgyy yzgzks kt zy σ nbko ynu' rj t uz ng–k gi i kyy zu znk rskwbuf j gzg ul znk i rgyy1S k[z. rσ k 49 ' yky znk grσy zu ykz znk –gr' k ul ipvs zu 63 +gt σ –grσj –gr' k, gt j rσ k 4: j σyvrg] y znk –gr' k xkz' xt kj h] l' t izσut hfuMpvs zu ynu; zngz gyyσmt σ mg –gr' k zu ipvsSfg giz' grr] s uj dcky znk rskwbuf j gzg σ znk [knf uhṕki z u1I σ grr]. rσ k 54 ' yky znk cbeafuMpvs l' t izσut i grr σykrl gy gt r'i nzl gt j gyyσmt y : 7 +gt uznkx σ –grσj –gr' k, zu znk xklkxkt i k xkz' xt kj h] znk l' t izσut 1Pσ k 59 gngσ j σyvrg] y znk –gr' k xkz' xt kj h] l' t izσut hfuMpvs zu ynu; zngz gyyσmt σ mg –gr' k zu znk xky' rz ul znk l' t izσut i grr σ rσ k 54 s uj dcky znk rskwbuf j gzg σ znk [knf uhṕki z u1

```
2    // Hkh. ;.38< gkh2;}38.drr
3    // Ffnpotusbukoh b rvcmkd nfncfs gvodukpo uibu
4    // sfuvsot b sfgfsfodf up b rskwbuf ebub nfncfs.
5    $kodmvef >kptusfbnA
6    $kodmvef #[knf.i# // kodmvef efgkokukpo pg dmbtt [knf
7    vtkoh obnftrbdf tue=
8
9    kou nbko*+

21      [knf u= // dsfbuf [knf pc'fdu
22
23      // kokukbmk f ipvsSfg !kui uif sfgfsfodf sfuvsofe c  cbeafuMpvs
24      kou (ipvsSfg ? u.cbeafuMpvs* 42 += // 42 kt b wbmke ipvs
25
26      dpvu >> #]bmke ipvs cfgpsf npekgkdbukpo< # >> ipvsSfg=
27      ipvsSfg ? 52= // vtf ipvsSfg up tfu kowbmke wbmvf ko [knf pc'fdu u
28      dpvu >> #zoNowbmke ipvs bgufs npekgkdbukpo< # >> u.hfuMpvs*+=
29
2       // Fbohfspvt< Hvodukpo dbmm uibu sfuvsot
31      // b sfgfsfodf dbo cf vtfe bt bo mwbmvf"
32      u.cbeafuMpvs* 34 + ? 96= // bttkho bopuifs kowbmke wbmvf up ipvs
33
34      dpvu >> #zozo,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,zo#
35         >> #XVVS XSVISDTTNUI XSDL[NLG"""""""""zo#
36         >> #u.cbeafuMpvs* 34 + bt bo mwbmvf0 kowbmke ipvs< #
37         >> u.hfuMpvs*+
38         >> #zo,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,# >> foem=
39   // foe nbko
```

```
]bmke ipvs cfgpsf npekgkdbukpo< 42
Nowbmke ipvs bgufs npekgkdbukpo< 52


,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
XVVS XSVISDTTNUI XSDL[NLG"""""""""
u.cbeafuMpvs* 34 + bt bo mwbmvf0 kowbmke ipvs< 96

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
```

σE Eh   j w   "' s w̨ww uẘ   s rskwbuf vs s   w twl

> **wuvА Twr0nt -аut bоv ЕʰЦ**
>
> *alyzvsœ ni vl lvls l tvi utœ ylvyt i #r icokiyi l lv vlipuy l ls iuuæ riyœs t y l riuuis k ipluy l rols y tkl klul s kls yts y l vluvlubs yiyœs t y l riuuukiyi y œv œui kis nlvtzuuvi yo l y iywtzœk l i!toklkF*

Ħ G Pme. r- ns gmₓ oym yyœnt s nt -

a nk gyyœnt s kt z uvkxgzux +?, i gt hk ’ ykj zu gyyœnt gt uhₚki z zu gt uznkx uhₚki z ul znk ygs kz] vk1Е] j klg’ rz. y’ in gyyœnt s kt z œy vkxluxs kj h] **wpwmp,—upk--us’ wp’ H** kgi n j gzg s ks hkx ul znk uhₚki z ut znk xœmz ul znk gyyœnt s kt z uvkxgzux œy gyyœnt kj œ j œ–œj ’ 0 grr] zu znk ygs k j gzg s ks hkx œ znk uhₚki z ut znk rklz ul znk gyyœnt s kt z uvkxgzux1 I œm xky B14: —B14A j klœ k i rgyy Fbuf lux ’ yk œ znœ k[gs vrk1Pœ k 4A ul I œn1 B14B ’ yky **oprkl Hvpwmp,—upk--us’ wp’ H** zu gyyœnt znk j gzg s ks hkxy ul Fbuf uhₚki z ebuf3 zu znk i uxxkyvut j œ mj gzg s ks hkxy ul Fbuf uhₚki z ebuf41 N znœ y igyk. znk npoui s ks hkx ul ebuf3 œy gyyœnt kj zu znk npoui s ks hkx ul ebuf4. znk eb s ks hkx ul ebuf3 œy gyyœnt kj zu znk eb s ks hkx ul ebuf4 gt j znk fbs s ks hkx ul ebuf3 œy gyyœnt kj zu znk fbs s ks 0 hkx ul ebuf41 *i zyœt s* R ks hkx; œyk gyyœnt s kt z i gt i g’ yk ykxœu’ y vxuhrks y; nkt ’ ykj ; œn g i rgyy; nuyk j gzg s ks hkxy i ut zgœ vuœ zkxy zu j] t gs œ grr] grruigzkj s ks ux] ; k j œyi’ yy znkyk vxuhrks y œ F ngvzkx 44 gt j ynu; nu; zu j kgr; œn znks 1 a nk Fbuf i ut 0 yzx’ i zux j uky t uz i ut zgœ gt] kxxux i nki œœt m ; k rkg—k znœy zu znk k[kxœ œyky1

```
2    // Hkh. ;.39< Fbuf.i
3    // Fbuf dmbtt efdmbsbukpo. Tfncfs gvodukpot bsf efgkofe ko Fbuf.drr.
4
5    // rsfwfou nvmukrmf kodmvtkpot pg ifbefs gkmf
6    $kgoefg FD[G}M
7    $efgkof FD[G}M
8
9    // dmbtt Fbuf efgkokukpo
     dmbtt Fbuf
21
22   rvcmkd<
23      Fbuf* kou ? 30 kou ? 30 kou ? 4222 += // efgbvmu dpotusvdups
24      wpke rskou*+=
25   rskwbuf<
26      kou npoui=
27      kou eb =
28      kou  fbs=
29    = // foe dmbtt Fbuf
2
31   $foekg
```

œn Е Ħ j Fbuf us vwus s “ l

```
2    // Hkh. ;.3:< Fbuf.drr
3    // Fbuf dmbtt nfncfs1gvodukpo efgkokukpot.
4    $kodmvef >kptusfbnA
5    $kodmvef #Fbuf.i# // kodmvef efgkokukpo pg dmbtt Fbuf gspn Fbuf.i
```

œn Е Ħ — Fbuf us w tw.y u “ vwÿ “ “ l(is A yCl)

```
 6   vtkoh obnftrbdf tue=
 7
 8   // Fbuf dpotusvdups *tipvme ep sbohf difdlkoh+
 9   Fbuf<<Fbuf* kou n0 kou e0 kou    +

21     npoui ? n=
22     eb  ? e=
23      fbs ?  =
24    // foe dpotusvdups Fbuf
25
26   // rskou Fbuf ko uif gpsnbu nn/ee/
27   wpke Fbuf<<rskou*+
28
29     dpvu >> npoui >>  /  >> eb  >>  /  >>  fbs=
 2    // foe gvodukpo rskou
```

σnE Ᵽ —   Fbuf us   w tw.y u “ vẅ ï ““   I(is C yCI)

```
 2   // Hkh. ;.3;< gkh2;}3;.drr
 3   // Ffnpotusbukoh uibu dmbtt pc'fdut dbo cf bttkhofe
 4   // up fbdi puifs vtkoh efgbvmu nfncfs!ktf bttkhonfou.
 5   $kodmvef >kptusfbnA
 6   $kodmvef #Fbuf.i# // kodmvef efgkokukpo pg dmbtt Fbuf gspn Fbuf.i
 7   vtkoh obnftrbdf tue=
 8
 9   kou nbko*+

21     Fbuf ebuf3* 90 60 4226 +=
22     Fbuf ebuf4= // ebuf4 efgbvmut up 3/3/4222
23
24     dpvu >> #ebuf3 ? #=
25     ebuf3.rskou*+=
26     dpvu >> #zoebuf4 ? #=
27     ebuf4.rskou*+=
28
29     ebuf4 ? ebuf3= // efgbvmu nfncfs!ktf bttkhonfou
 2
31     dpvu >> #zozoDgufs efgbvmu nfncfs!ktf bttkhonfou0 ebuf4 ? #=
32     ebuf4.rskou*+=
33     dpvu >> foem=
34    // foe nbko
```

```
ebuf3 ? 9/6/4226
ebuf4 ? 3/3/4222

Dgufs efgbvmu nfncfs!ktf bttkhonfou0 ebuf4 ? 9/6/4226
```

σnE Ᵽ   Vẅys   w tw “ws “   w I

Thℓㅣki zy s g] hk vgyykj gy l' t izout gxm̂s kt zy gt j s g] hk xkz' xt kj lxus l' t izout yl Y' in vgyyⱭ mgt j xkz' xt Ɑ moy vkxluxs kj ' yⱭ mvgyy0h] 0–gr' k h] j klg' rz g iuv] ul znk uhℓkiz oy vgyykj ux xkz' xt kj 1N̈ y' in i gyky. F -- ixkgzky g t k; uhℓki z gt j ' yky g **n( ) n('** **-Ᵽ,l nᵽᵻ,** zu i uv] znk uxoⱭ Ɑt gr uhℓki z''y–gr' ky Ɑ zu znk t k; uhℓki zlI uxkgi n i rgyy. znk i us vⱭkx

vxu–gj ky gj klg' rz iuv] iut yzx' izux zngz iuvdkykgi n s ks hkx ul znk uxonat gr uhpki z ot zu znk iuxxkyvuot ja ms ks hkx ul znk t k; uhpki z1Pqk s ks hkx; oyk gyyont s kt z. iuv] iut yzx' izuxy igt ig' yk ykxou' y vvxuhrks y; nkt ' ykj ; oen g irgyy; nuyk jgzg s ks hkxy iut zga vuot zkxy zu j] t gs oi grr] grruigzkj s ks ux] 1F ngvzkx 44 joi' yyky nu; zu j kla t i' yzus o'kj iuv] iut 0 yzx' izuxy zngz vxuvkxr] iuv] uhpki zy iut zga ot mvuot zkxy zu j] t gs oi grr] grruigzkj s ks ux] 1

E l d vevA v

a noy i ngvzkx j kkvkt kj u' x iu–kxgmk ul irgyyky. ' yot mg xoin [knf irgyy igyk yz' j] zu ot zxu0 j ' i kyk–kxgr t k; lkgz' xky1f u' yg; zngz s ks hkx l' t i zaut ygxk' y' grr] ynuxzkx zngt mruhgr l' t i zaut y hkig' yk s ks hkx l' t i zaut y igt j okki zr] gi i kyy gt uhpki z'y jgzg s ks hkxy. yu znk s ks hkx l' t i zaut y igt xki ko–k lk; kx gxm's kt zy zngt l' t i zaut y ot vxui kj' xgr vxumxgm s 0 s ot mrgt m'gmky1f u' rkgxt kj nu; zu' yk znk gxxu; uvkxgzux zu gi i kyy uhpki z'ys ks hkxy –ag g vuot zkx ul znk uhpki z'y i rgyy z] vk1

f u' rkgxt kj zngz s ks hkx l' t i zaut y ng–ki rgyy yi uvk znk s ks hkx l' t i zaut "y t gs k oy qt u; t ut r] zu znk i rgyy'y uznkx s ks hkxy' t rkyy xkllkxxkj zu –ag gt uhpki z ul znk i rgyy. g xkl0 kxkt i k zu gt uhpki z ul znk i rgyy. g vuot zkx zu gt uhpki z ul znk i rgyy ux znk hat gx] yi uvk xkyu0 r' zaut uvkxgzux1d k gryu j oyi' ykj gi i kyy l' t i zaut y +ius s ut r] ' ykj zu xkzxok–k znk –gr' ky ul j gzg s ks hkxy ux zu zkyz znk zx' zn ux lgryoz] ul i ut j oaut y, gt ' ' zaoz] l' t i zaut y +rskwbuf s ks hkx l' t i zaut y zngz y' vvuxz znk uvkxgzout ul znk i rgyy'y rvcmkd s ks hkx l' t i zaut y,1

f u' rkgxt kj zngz g iut yzx' izuxi gt yvki d] j klg' rz gxm's kt zy zngz kt ghrk oz zu hk i grrkj ot g –gxkdz] ul; g]y1f u' gryu rkgxt kj zngz gt] iut yzx' izux zngz i gt hk i grrkj ; oen t u gxm's 0 s kt zy oy g j klg' rz iut yzx' izux gt j zngz znkxk i gt hk gz s uyz ut k j klg' rz iut yzx' izux vkx i rgyy1d kj oyi' ykj kyzx' izuxy gt j znkox v' xvuyk ul vkxlux's ot mzkxs ot gzaut nu' ykqkkv ot m ut gt uhpki z ul g i rgyy hkluxk zngz uhpki z oy j kyzxu]kj1d k gryu j ks ut yzxgzkj znk uxj kx ot ; noi n gt uhpki z'y i ut yzx' izuxy gt j j kyzx' izuxy gxk i grrkj 1

d kj ks ut yzxgzkj znk vxuhrks y zngz i gt ui i' x; nkt gs ks hkx l' t i zaut xkz' xt y g xkl0 kxkt i k zu g rskwbuf j gzg s ks hkx. ; noi n hxkgqy znk kt i gvy' rgzaut ul znk i rgyy1d k gryu ynu; kj zngz uhpki zy ul znk ygs k z] vk i gt hk gyyomt kj zu ut k gt uznkx' yot mj klg' rz s ks 0 hkx; oyk gyyont s kt z1d k gryu j oyi' ykj znk hkt klozy ul ' yot mi rgyy rdxgxdky zu kt ngt i k znk yvkkj ; oen ; noi n iuj k i gt hk ixkgzkj gt j zu oi xkgyk znk w' groz] ul yulz; gxk1

F ngvzkx 43 vxkykt zy gj j oaut gr irgyy lkgz' xky1d k''rj ks ut yzxgzk nu; dpotu igt hk ' ykj zu ot j oi gzk zngz g s ks hkx l' t i zaut j ukytuz s ujd] gt uhpki z ul g i rgyy1f u' "rr h' ot j irgyyky; oen i us vuyoaut . ; noin grru; y g irgyy zu iut zga uhpki zy ul uznki rgyyky gy s ks 0 hkxy1d k''rrynu; nu; g irgyy igt grru; yu0 grrkj lxokt j l' t i zaut yzu gi i kyy znk irgyy'yt ut 0 rvcmkd s ks hkxy1d k''rr gryu ynu; nu; g irgyy'yt ut0 tubukd s ks hkx l' t i zaut y igt ' yk g yvki gr vuot zkx t gs kj uikt zu gi i kyy gt uhpki z'ys ks hkxy1