```
c*************************************************************
      program maginv
c*************************************************************
c
      implicit real*8 (a-h,o-y)
c
      common /comar1/f(3,300)
      common /comin1/fmax,fmin,nd
      common /comche/h(10),d(10),offset
      common /comin3/a(10),b(10),Y0(10),c,e,X0
      common /comin4/hh(10),dd(10)
      common /comin5/taiji
      common /compai/pai
      common /comar3/g(300)
      common /comar5/gp(21,21)
      common /comar6/dp(21)
c
      write(*,*)
      write(*,*) '        let's start magnetic inversion      '
c
      call data
      call init2
c
   10 continue
c
      call riron
c
      call inv
c
      write(*,*) '        continue or stop ?        '
      write(*,*) '        continue ..... 1        '
      write(*,*) '        stop ..... 9        '
      read(*,*) nr
      if(nr.eq.1) goto 10
c
      stop
```

```
      end
c
c     ***************
      subroutine data
c     ***************
c
      implicit real * 8 (a-h,o-y)
c
      common /comar1/f(3,3000)
      common /comin1/fmax,fmin,nd
      common /comin2/i0,j0,cxy
c
      write(*,*)
      write(*,*) '          data input        '
      write(*,*)
c
      write(*,*) '          origin of data point: (ii0,jj0)          '
      read(*,*) ii0, jj0
      write(*,*) '          data number in x- & y-directions          '
      read(*,*) k, l
c
c
      call init1
c
c
      fmax=0
      fmin=0
c
      do 100 i=1,k
      do 100 j=1,l
        nn=(i-1)*l+j
        si=float(ii0-i0)
        sj=float(jj0-j0)
        f(1,nn)=sn*(si*cos(cxy)+sj*sin(cxy))
        f(2,nn)=sn*(sj*cos(cxy)-si*sin(cxy))
        read(51,2000) f(3,nn)
```

```
c
            if(f(3,nn).gt.fmax) then
                    fmax=f(3,nn)
                else if(f(3,nn).lt.fmin) then
                    fmin=f(3,nn)
            end if
  100 continue
c
          nd=k*l
c
          write(*,*) '          fmax= ',fmax,'          fmin= ',fmin
c
 2000 format(1pe12.5)
c
          return
          end
c
c         ****************
c         subroutine init1
c         ****************
c
          implicit real*8 (a-h,o-y)
c
          common /comin2/i0,j0,cxy
          common /compai/pai
c
          pai=3.14159265358979323846
c
          write(*,*) '          X-Y coordinate          '
          write(*,*) '          origin: i0,j0 =          '
          read(*,*) i0,j0
          write(*,*) '          angle in degree bewteen i-axis and X-axis    '
          read(*,*) cc
c
          cxy=cc*pai/1.8d2
c
```

```
      return
      end
c
c     ****************
      subroutine init2
c     ****************
c
      implicit real * 8 (a-h,o-y)
c
      common /comche/h(10),d(10),offset
      common /comin3/a(10),b(10),Y0(10),c,e,X0
      common /comin4/hh(10),dd(10)
      common /comin5/taiji
      common /compai/pai
c
      pai=3.14159265358979323846
c
   10 continue
      write(*,*) '   input inclination in degree   '
      read(*,*) cc
      c=cc*pai/1.8d2
      write(*,*) 'input angle between positive x-axis and mag. north'
      read(*,*) ee
      e=ee*pai/1.8d2
c
      x0=0.
      y0(1)=-30.
c
      do 100 i=1,10
  100 a(i)=50.
      do 150 i=1,10
      read(15,*) b(i),h(i),d(i)
      hh(i)=h(i)
  150 dd(i)=d(i)
c
c
```

```
      write(*,*) '    input offset value in nT     '
      read(*,*) offset
c
      write(*,*) '    input susceptibility in emu/cc    '
      read(*,*) taiji
      taiji=taiji*4.0*pai*46000.0
c
      do 200 i=2,10
         Y0(i)=Y0(i-1)+b(i-1)+b(i)
         write(*,*) '      Y0(',i,')= ',Y0(i)
  200 continue
c
      return
      end
c
c     ****************
      subroutine riron
c     ****************
c
      implicit real * 8 (a-h,o-y)
c
      common /comin1/fmax,fmin,nd
      common /comar1/f(3,300)
      common /comar3/g(300)
      common /comar5/gp(21,21)
      common /comar6/dp(21)
c
      dimension hen(21)
c
      do 10 i=1,21
         do 20 j=1,21
            gp(i,j)=0
   20    continue
         dp(i)=0
   10 continue
      gmax=-1000.
```

```
      gmin=1000.
      write(*,*) nd
c
      do 100 nn=1,nd
c
          call keisan(nn)
c
          if(g(nn).GT.gmax) then
                gmax=g(nn)
c               Xmax=f(1,nn)
c               Ymax=f(2,nn)
            else if(g(nn).LT.gmin) then
                gmin=g(nn)
c               Xmin=f(1,nn)
c               Ymin=f(2,nn)
          end if
c
          call henbun(hen,f(1,nn))
c
          do 210 i=1,21
            do 220 j=i,21
              gp(i,j)=gp(i,j)+hen(i)*hen(j)
  220       continue
            dp(i)=dp(i)+(f(3,nn)-g(nn))*hen(i)
  210     continue
c
  100 continue
c
      write(*,*) ' gmax =',gmax,' gmin =',gmin
c
      do 30 i=2,21
          do 40 j=1,i-1
            gp(i,j)=gp(j,i)
   40     continue
   30 continue
c
```

```
c       write(*,*) 'gp'
c       do 60 i=1,10
c           write(*,*) (gp(i,j),j=1,5)
c           write(*,*) (gp(i,j+5),j=1,5)
c           write(*,*)
c   60 continue
c
c       write(*,*) 'dp'
c       write(*,*) (dp(j),j=1,5)
c       write(*,*) (dp(j),j=6,10)
c       write(*,*)
c
c       do 70 nn=1,nd
c           write(*,*) f(3,nn),g(nn)
c   70 continue
c
        return
        end
c
c       **********************
        subroutine keisan(nn)
c       **********************
c
        implicit real * 8 (a-h,o-y)
c
        common /comche/h(10),d(10),offset
        common /comin3/a(10),b(10),Y0(10),c,e,X0
        common /comin5/taiji
        common /comar1/f(3,300)
        common /comar3/g(300)
c
        x=X0-X0
c
        cc=cos(c)
        sc=sin(c)
        ce=cos(e)
```

```
      se=sin(e)
c
      g(nn)=0.0
      do 100 i=1,10
c
         y=f(1,nn)-Y0(i)
         p1=-x+a(i)
         p2=-x-a(i)
         q1=-y+b(i)
         q2=-y-b(i)
c
         hh=h(i)
         iii=1
   10    continue
c
         r1=sqrt(p1*p1+q1*q1+hh*hh)
         r2=sqrt(p2*p2+q2*q2+hh*hh)
         r3=sqrt(p1*p1+q2*q2+hh*hh)
         r4=sqrt(p2*p2+q1*q1+hh*hh)
c
         g1=cc*sc*se*(log((r1-p1)/(r1+p1))+log((r2-p2)/(r2+p2))
     -                  -log((r3-p1)/(r3+p1))-log((r4-p2)/(r4+p2)))
         g2=cc*sc*ce*(log((r1-q1)/(r1+q1))+log((r2-q2)/(r2+q2))
     -                  -log((r3-q2)/(r3+q2))-log((r4-q1)/(r4+q1)))
         g3=-2*cc*cc*se*ce*(log(r1+hh)+log(r2+hh)
     -                        -log(r3+hh)-log(r4+hh))
         g4=-cc*cc*ce*ce*
     -        (atan(p1*q1/(r1*hh+p1*p1+hh*hh))
     -        +atan(p2*q2/(r2*hh+p2*p2+hh*hh))
     -        -atan(p1*q2/(r3*hh+p1*p1+hh*hh))
     -        -atan(p2*q1/(r4*hh+p2*p2+hh*hh)))
         g5=-cc*cc*se*se*
     -        (atan(p1*q1/(r1*hh+q1*q1+hh*hh))
     -        +atan(p2*q2/(r2*hh+q2*q2+hh*hh))
     -        -atan(p1*q2/(r3*hh+q2*q2+hh*hh))
     -        -atan(p2*q1/(r4*hh+q1*q1+hh*hh)))
```

```
            g6=sc*sc*(atan(p1*q1/hh/r1)+atan(p2*q2/hh/r2)
     -                  -atan(p1*q2/hh/r3)-atan(p2*q1/hh/r4))
c
            g0=(g1+g2+g3+g4+g5+g6)
c       write(*,1000) int(g1*1000),int(g2*1000),int(g3*1000),
c     -                   int(g4*1000),int(g5*1000),int(g6*1000)
c1000 format(' ',6i5)
c
            if(iii.EQ.1) then
                g(nn)=g(nn)+g0
                iii=0
                hh=h(i)+d(i)
                goto 10
            end if
            g(nn)=g(nn)-g0
c
  100 continue
c
        g(nn)=taiji*g(nn)+offset
c
        return
        end
c
c       ************************************************
        subroutine henbun(hen,YY)
c       ************************************************
c
        implicit real * 8 (a-h,o-y)
c
        common /comche/h(10),d(10),offset
        common /comin3/a(10),b(10),Y0(10),c,e,X0
        common /comin5/taiji
c
        dimension hen(21)
c
        gh1(p,q,r,hh)=2*hh*p/(q*q+hh*hh)/r
```

```
      gh2(p,q,r,hh)=2*hh*q/(p*p+hh*hh)/r
      gh4(p,q,r,hh)=-p*q/(p*p+hh*hh)/r
      gh5(p,q,r,hh)=-p*q/(q*q+hh*hh)/r
      gh6(p,q,r,hh)=-p*q*(p*p+q*q+2*hh*hh)
     -                  /r/(p*p+hh*hh)/(q*q+hh*hh)
c
      x=X0-X0
      cc=cos(c)
      sc=sin(c)
      ce=cos(e)
      se=sin(e)
c
      do 100 i=1,10
c
        y=YY-Y0(i)
c
        p1=-x+a(i)
        p2=-x-a(i)
        q1=-y+b(i)
        q2=-y-b(i)
        h1=h(i)
        h2=h(i)+d(i)
        r11=sqrt(p1*p1+q1*q1+h1*h1)
        r12=sqrt(p1*p1+q1*q1+h2*h2)
        r21=sqrt(p2*p2+q2*q2+h1*h1)
        r22=sqrt(p2*p2+q2*q2+h2*h2)
        r31=sqrt(p1*p1+q2*q2+h1*h1)
        r32=sqrt(p1*p1+q2*q2+h2*h2)
        r41=sqrt(p2*p2+q1*q1+h1*h1)
        r42=sqrt(p2*p2+q1*q1+h2*h2)
c
        gh01=cc*sc*se*(gh1(p1,q1,r11,h1)-gh1(p1,q1,r12,h2)
     -                 +gh1(p2,q2,r21,h1)-gh1(p2,q2,r22,h2)
     -                 -gh1(p1,q2,r31,h1)+gh1(p1,q2,r32,h2)
     -                 -gh1(p2,q1,r41,h1)+gh1(p2,q1,r42,h2))
        gh02=cc*sc*ce*(gh2(p1,q1,r11,h1)-gh2(p1,q1,r12,h2)
```

```
     -                        +gh2(p2,q2,r21,h1)-gh2(p2,q2,r22,h2)
     -                        -gh2(p1,q2,r31,h1)+gh2(p1,q2,r32,h2)
     -                        -gh2(p2,q1,r41,h1)+gh2(p2,q1,r42,h2))
          gh03=-2*cc*cc*se*ce*(1/r11-1/r12+1/r21-1/r22
     -                             -1/r31+1/r32-1/r41+1/r42)
          gh04=-cc*cc*ce*ce*(gh4(p1,q1,r11,h1)-gh4(p1,q1,r12,h2)
     -                             +gh4(p2,q2,r21,h1)-gh4(p2,q2,r22,h2)
     -                             -gh4(p1,q2,r31,h1)+gh4(p1,q2,r32,h2)
     -                             -gh4(p2,q1,r41,h1)+gh4(p2,q1,r42,h2))
          gh05=-cc*cc*se*se*(gh5(p1,q1,r11,h1)-gh5(p1,q1,r12,h2)
     -                             +gh5(p2,q2,r21,h1)-gh5(p2,q2,r22,h2)
     -                             -gh5(p1,q2,r31,h1)+gh5(p1,q2,r32,h2)
     -                             -gh5(p2,q1,r41,h1)+gh5(p2,q1,r42,h2))
          gh06=sc*sc*(gh6(p1,q1,r11,h1)-gh6(p1,q1,r12,h2)
     -                       +gh6(p2,q2,r21,h1)-gh6(p2,q2,r22,h2)
     -                       -gh6(p1,q2,r31,h1)+gh6(p1,q2,r32,h2)
     -                       -gh6(p2,q1,r41,h1)+gh6(p2,q1,r42,h2))
          gd01=cc*sc*se*(-gh1(p1,q1,r12,h2)-gh1(p2,q2,r22,h2)
     -                          +gh1(p1,q2,r32,h2)+gh1(p2,q1,r42,h2))
          gd02=cc*sc*ce*(-gh2(p1,q1,r12,h2)-gh2(p2,q2,r22,h2)
     -                          +gh2(p1,q2,r32,h2)+gh2(p2,q1,r42,h2))
          gd03=-2*cc*cc*se*ce*(-1/r12-1/r22+1/r32+1/r42)
          gd04=-cc*cc*ce*ce*(-gh4(p1,q1,r12,h2)-gh4(p2,q2,r22,h2)
     -                             +gh4(p1,q2,r32,h2)+gh4(p2,q1,r42,h2))
          gd05=-cc*cc*se*se*(-gh5(p1,q1,r12,h2)-gh5(p2,q2,r22,h2)
     -                             +gh5(p1,q2,r32,h2)+gh5(p2,q1,r42,h2))
          gd06=sc*sc*(-gh6(p1,q1,r12,h2)-gh6(p2,q2,r22,h2)
     -                       +gh6(p1,q2,r32,h2)+gh6(p2,q1,r42,h2))
c
          hen(i+10)=taiji*(gd01+gd02+gd03+gd04+gd05+gd06)
          hen(i)=taiji*(gh01+gh02+gh03+gh04+gh05+gh06)
c
  100 continue
c
          hen(21)=1.
c
```

```
      return
      end
c
c     **************
      subroutine inv
c     **************
c
      implicit real * 8 (a-h,o-y)
c
      common /comar1/f(3,300)
      common /comar3/g(300)
      common /comar5/gp(21,21)
      common /comar6/dp(21)
      common /comin1/fmax,fmin,nd
      common /comin3/a(10),b(10),Y0(10),c,e,X0
      common /comche/h(10),d(10),offset
c
      dimension gpp(21,21),qq(5),pmp(21),pmpp(5,21),
     -          pm(5,22),wk(21),h0(10),d0(10)
c
      pp=0.0
      do 10 i=1,21
         pp=pp+gp(i,i)
   10 continue
      pp=pp/21.0
c
      qq(1)=1.0d-2
      qq(2)=1.0d-1
      qq(3)=1.0d0
      qq(4)=1.0d1
      qq(5)=1.0d2
c
      do 20 i=1,10
         h0(i)=h(i)
         d0(i)=d(i)
   20 continue
```

```
c
      offs=offset
c
      write(*,*) '    enter offsetvalue'
      read(*,*) poff
      do 100 i=1,5
c
c         write(*,*) i
c
          ramuda=pp*qq(i)
c
          do 150 ii=1,21
              do 160 jj=1,21
                  if(ii.EQ.jj) then
                          gpp(ii,jj)=gp(ii,jj)+ramuda
                      else
                          gpp(ii,jj)=gp(ii,jj)
                  end if
  160          continue
              pmp(ii)=dp(ii)
  150      continue
c
          call ¥dlf2m(gpp,21,21,pmp,0.0,1,wk,ier)
c
          do 180 jj=1,21
              pmpp(i,jj)=pmp(jj)
  180      continue
c
          do 190 j=1,10
              pm(i,j)=pmp(j)+h0(j)
              pm(i,j+10)=pmp(j+10)+d0(j)
c
              if(pm(i,j+10).LE.0) then
                  pm(i,j+10)=0.1
              end if
c
```

```
                h(j)=pm(i,j)
                d(j)=pm(i,j+10)
  190       continue
c
                  pmp(21)=pmp(21)*poff
        pm(i,21)=pmp(21)+offs
        offset=pm(i,21)
c
c
            gmax=0
            gmin=0
c
            do 200 nn=1,nd
c
                call keisan(nn)
c
                if(g(nn).GT.gmax) then
                        gmax=g(nn)
                  else if(g(nn).LT.gmin) then
                        gmin=g(nn)
                end if
  200       continue
c
            pm(i,22)=0
c
            do 300 nn=1,nd
                pq=g(nn)-f(3,nn)
                pm(i,22)=pm(i,22)+pq*pq
  300       continue
c
            pm(i,22)=sqrt(pm(i,22)/nd)
c
  100 continue
c
*       write(*,*)
c
```

```
*       write(*,*) 'pmpp'
*       do 330 i=1,5
*           write(*,*) (pmpp(i,j),j=1,5)
*           write(*,*) (pmpp(i,j),j=6,10)
*           write(*,*) (pmpp(i,j),j=11,15)
*           write(*,*) (pmpp(i,j),j=16,20)
*           write(*,*) pmp(21)
*           write(*,*)
* 330 continue
c
*       write(*,*)
*       write(*,*) 'pm'
*       do 360 i=1,5
*           write(*,*) (pm(i,j),j=1,5)
*           write(*,*) (pm(i,j),j=6,10)
*           write(*,*) (pm(i,j),j=11,15)
*           write(*,*) (pm(i,j),j=16,20)
*           write(*,*) pm(i,22)
*           write(*,*)
* 360 continue
c
        imin=1
        do 400 i=2,5
            if(pm(i,22).LT.pm(imin,22)) then
                imin=i
            end if
  400 continue
c
        write(*,*)
        write(*,*) 'saitekichi!!'
        write(*,888) (pmpp(imin,j),j=1,5)
        write(*,888) (pmpp(imin,j),j=6,10)
        write(*,888) (pmpp(imin,j),j=11,15)
        write(*,888) (pmpp(imin,j),j=16,20)
        write(*,999)    pmpp(imin,21)
        write(*,*)
```

```
      write(*,888) (pm(imin,j),j=1,5)
      write(*,888) (pm(imin,j),j=6,10)
      write(*,888) (pm(imin,j),j=11,15)
      write(*,888) (pm(imin,j),j=16,20)
      write(*,999) pm(imin,21)
      write(*,777) pm(imin,22),qq(imin)
      write(*,*)
c
  888 format (5(3x,f7.2)/)
  999 format (3x,f7.2/)
  777 format (2(3x,f7.2)/)
c
      do 500 j=1,10
         h(j)=pm(imin,j)
         d(j)=pm(imin,j+10)
  500 continue
c
      offset=pm(imin,21)
c
      return
      end
c
c     ************************
      subroutine graph(ncheck)
c     ************************
c
      implicit real * 8 (a-h,o-y)
c
      common /comar1/f(3,300)
      common /comar3/g(300)
      common /comche/h(10),d(10),offset
      common /comin1/fmax,fmin,nd
      common /comin3/a(10),b(10),Y0(10),c,e,X0
      common /comin4/hh(10),dd(10)
c
      dimension zg(300),zf(300),zx(300),zb(10),zh(10),zd(10),iu(4)
```

```
      iu(1)=315
      iu(2)=240
      iu(3)=189
      iu(4)=144
c
      z=real(ncheck)
      write(*,*) ncheck
c
*     do 10 ied=1,2
c
      gmax=-1000.
      gmin=1000.
c
      hensa=0.0
c
      do 100 nn=1,nd
         call keisan(nn)
c
         pq=g(nn)-f(3,nn)
         hensa=hensa+pq*pq
c
         if(g(nn).GT.gmax) then
               gmax=g(nn)
               max=nn
            else if(g(nn).LT.gmin) then
               gmin=g(nn)
               min=nn
         end if
  100 continue
c
      hensa=sqrt(hensa/nd)
c
      write(*,*) 'hensa = ',hensa
      write(*,*) 'max = ',max,'                min = ',min
      write(*,*) 'gmax = ',gmax,' gmin = ',gmin
c
```

```
c
      do 200 nn=1,nd
      f(3,nn)=f(3,nn)-offset
          zf(nn)=f(3,nn)/10.0+80.0
      g(nn)=g(nn)-offset
          zg(nn)=g(nn)/10.0+80.0
          zx(nn)=f(1,nn)/2.+27.0
  200 continue
c
      do 250 i=1,10
          zb(i)=b(i)
          zh(i)=h(i)+d(i)-3.2
          zd(i)=d(i)
  250 continue
c
          ied=1
c
      call device('XYPLOT    ',J,J,J,J)
      call rwind(0,0,iu(ied*2-1)*80,iu(ied*2)*80)
      call vsini(0.0,0.0,210.0,160.0)
c
      call newpen(3)
c
      call plot(10.0,8.0,3)
      call plot(10.0,38.0,2)
      call plot(12.0,40.0,3)
      call plot(122.0,40.0,2)
c
      do 450 i=0,6
          call plot(25.,float(i*10)+50.0,3)
          call plot(26.,float(i*10)+50.0,2)
  450 continue
c
      do 460 i=0,2
      call ¥ae02(17.,49.+float(i*10),2.,float(i-3)*100.,0.,-1)
  460 call ¥ae02(19.,49.+float((i+4)*10),2.,float(i+1)*100.,0.,-1)
```

```
c
      call ¥ae02(23.,49.+30.,2.,0.,0.,-1)
      call ¥ae01(18.,49.+64.,2.,'(nT)',0.,4)
c
          zzx=12.0
      do 500 i=0,4
          if(i.eq.4) goto 488
          call plot(8.0,float(i)*10.0+8.0,3)
          call plot(10.0,float(i)*10.0+8.0,2)
  488     continue
          do 510 j=1,2
              if(2*i+j.NE.1) then
                  zzx=zzx+zb(2*i+j-1)
              end if
              call rect(zzx,38.0-zh(2*i+j)/2.0,zd(2*i+j)/2.0,
     -                  zb(2*i+j),0.0,3)
  510     continue
c
      if(i.eq.0) goto 500
      if(i.eq.4) goto 500
      call ¥ae02(4.,36.-float(i)*10.,2.,float(i)*20.,0.,-1)
c
  500 continue
c
      call ¥ae02(6.,36.,2.,0.,0.,-1)
      call ¥ae01(1.,2.,2.,'(km)',0.,4)
c
          zzx=12.0
c
      do 600 i=1,12
          call plot(float(i-1)*10.0+zzx,42.0,3)
          call plot(float(i-1)*10.0+zzx,40.0,2)
  600 continue
c
      call ¥ae02(zzx-1.,43.,2.,0.,0.,-1)
      do 630 k=1,4
```

```
  630 call ¥ae02(zzx-2.+float(k)*10.,43.,2.,float(k)*20.,0.,-1)
      do 640 k=5,11
  640 call ¥ae02(zzx-3.+float(k)*10.,43.,2.,float(k-5)*20.+100.,0.,-1)
      call ¥ae01(zzx-3.+116.,43.,2.,'(km)',0.,4)
c
      call plot(zx(1),zg(1),3)
c
      do 300 nn=2,nd
         call plot(zx(nn),zg(nn),2)
  300 continue
c
      call plot(zx(1),zf(1),3)
      call linsel(5)
c
      do 400 nn=2,nd
         call plot(zx(nn),zf(nn),2)
  400 continue
c
      do 700 i=0,3
         call plot(zzx,8.0+float(i)*10,3)
         call plot(zzx+110.0,8.0+float(i)*10,2)
  700 continue
c
      do 710 i=0,6
         call plot(27.,50.+float(i*10),3)
         call plot(122.,50.+float(i*10),2)
  710 continue
c
           write(*,*)   'error check     ok'
      call ¥ae01(132.0,158.0,2.0,'ncheck =',0.0,8)
      call ¥ae02(150.0,158.0,2.0,z,0.0,-1)
      call ¥ae01(132.0,151.0,2.0,'theta   =',0.0,8)
      call ¥ae02(150.0,151.0,2.0,c,0.0,5)
      call ¥ae01(132.0,148.0,2.0,' phay   =',0.0,8)
      call ¥ae02(150.0,148.0,2.0,e,0.0,5)
      call ¥ae01(132.0,145.0,2.0,'   X0     =',0.0,8)
```

```
call ¥ae02(150.0,145.0,2.0,X0,0.0,1)
call ¥ae01(132.0,141.0,2.0,'    a(1) =',0.0,8)
call ¥ae02(150.0,141.0,2.0,a(1),0.0,1)
call ¥ae01(132.0,138.0,2.0,'    a(2) =',0.0,8)
call ¥ae02(150.0,138.0,2.0,a(2),0.0,1)
call ¥ae01(132.0,135.0,2.0,'    a(3) =',0.0,8)
call ¥ae02(150.0,135.0,2.0,a(3),0.0,1)
call ¥ae01(132.0,132.0,2.0,'    a(4) =',0.0,8)
call ¥ae02(150.0,132.0,2.0,a(4),0.0,1)
call ¥ae01(132.0,129.0,2.0,'    a(5) =',0.0,8)
call ¥ae02(150.0,129.0,2.0,a(5),0.0,1)
call ¥ae01(132.0,126.0,2.0,'    a(6) =',0.0,8)
call ¥ae02(150.0,126.0,2.0,a(6),0.0,1)
call ¥ae01(132.0,123.0,2.0,'    a(7) =',0.0,8)
call ¥ae02(150.0,123.0,2.0,a(7),0.0,1)
call ¥ae01(132.0,120.0,2.0,'    a(8) =',0.0,8)
call ¥ae02(150.0,120.0,2.0,a(8),0.0,1)
call ¥ae01(132.0,117.0,2.0,'    a(9) =',0.0,8)
call ¥ae02(150.0,117.0,2.0,a(9),0.0,1)
call ¥ae01(132.0,114.0,2.0,'    a(10)=',0.0,8)
call ¥ae02(150.0,114.0,2.0,a(10),0.0,1)
call ¥ae01(172.0,141.0,2.0,'    b(1) =',0.0,8)
call ¥ae02(190.0,141.0,2.0,b(1),0.0,1)
call ¥ae01(172.0,138.0,2.0,'    b(2) =',0.0,8)
call ¥ae02(190.0,138.0,2.0,b(2),0.0,1)
call ¥ae01(172.0,135.0,2.0,'    b(3) =',0.0,8)
call ¥ae02(190.0,135.0,2.0,b(3),0.0,1)
call ¥ae01(172.0,132.0,2.0,'    b(4) =',0.0,8)
call ¥ae02(190.0,132.0,2.0,b(4),0.0,1)
call ¥ae01(172.0,129.0,2.0,'    b(5) =',0.0,8)
call ¥ae02(190.0,129.0,2.0,b(5),0.0,1)
call ¥ae01(172.0,126.0,2.0,'    b(6) =',0.0,8)
call ¥ae02(190.0,126.0,2.0,b(6),0.0,1)
call ¥ae01(172.0,123.0,2.0,'    b(7) =',0.0,8)
call ¥ae02(190.0,123.0,2.0,b(7),0.0,1)
call ¥ae01(172.0,120.0,2.0,'    b(8) =',0.0,8)
```

```
call ¥ae02(190.0,120.0,2.0,b(8),0.0,1)
call ¥ae01(172.0,117.0,2.0,'    b(9) =',0.0,8)
call ¥ae02(190.0,117.0,2.0,b(9),0.0,1)
call ¥ae01(172.0,114.0,2.0,'    b(10)=',0.0,8)
call ¥ae02(190.0,114.0,2.0,b(10),0.0,1)
call ¥ae01(132.0,111.0,2.0,'    h(1) =',0.0,8)
call ¥ae02(150.0,111.0,2.0,hh(1),0.0,1)
call ¥ae02(160.0,111.0,2.0,h(1),0.0,1)
call ¥ae01(132.0,108.0,2.0,'    h(2) =',0.0,8)
call ¥ae02(150.0,108.0,2.0,hh(2),0.0,1)
call ¥ae02(160.0,108.0,2.0,h(2),0.0,1)
call ¥ae01(132.0,105.0,2.0,'    h(3) =',0.0,8)
call ¥ae02(150.0,105.0,2.0,hh(3),0.0,1)
call ¥ae02(160.0,105.0,2.0,h(3),0.0,1)
call ¥ae01(132.0,102.0,2.0,'    h(4) =',0.0,8)
call ¥ae02(150.0,102.0,2.0,hh(4),0.0,1)
call ¥ae02(160.0,102.0,2.0,h(4),0.0,1)
call ¥ae01(132.0,99.0,2.0,'    h(5) =',0.0,8)
call ¥ae02(150.0,99.0,2.0,hh(5),0.0,1)
call ¥ae02(160.0,99.0,2.0,h(5),0.0,1)
call ¥ae01(132.0,96.0,2.0,'    h(6) =',0.0,8)
call ¥ae02(150.0,96.0,2.0,hh(6),0.0,1)
call ¥ae02(160.0,96.0,2.0,h(6),0.0,1)
call ¥ae01(132.0,93.0,2.0,'    h(7) =',0.0,8)
call ¥ae02(150.0,93.0,2.0,hh(7),0.0,1)
call ¥ae02(160.0,93.0,2.0,h(7),0.0,1)
call ¥ae01(132.0,90.0,2.0,'    h(8) =',0.0,8)
call ¥ae02(150.0,90.0,2.0,hh(8),0.0,1)
call ¥ae02(160.0,90.0,2.0,h(8),0.0,1)
call ¥ae01(132.0,87.0,2.0,'    h(9) =',0.0,8)
call ¥ae02(150.0,87.0,2.0,hh(9),0.0,1)
call ¥ae02(160.0,87.0,2.0,h(9),0.0,1)
call ¥ae01(132.0,84.0,2.0,'    h(10)=',0.0,8)
call ¥ae02(150.0,84.0,2.0,hh(10),0.0,1)
call ¥ae02(160.0,84.0,2.0,h(10),0.0,1)
call ¥ae01(172.0,111.0,2.0,'    d(1) =',0.0,8)
```

```
call ¥ae02(190.0,111.0,2.0,dd(1),0.0,1)
call ¥ae02(200.0,111.0,2.0,d(1),0.0,1)
call ¥ae01(172.0,108.0,2.0,'    d(2) =',0.0,8)
call ¥ae02(190.0,108.0,2.0,dd(2),0.0,1)
call ¥ae02(200.0,108.0,2.0,d(2),0.0,1)
call ¥ae01(172.0,105.0,2.0,'    d(3) =',0.0,8)
call ¥ae02(190.0,105.0,2.0,dd(3),0.0,1)
call ¥ae02(200.0,105.0,2.0,d(3),0.0,1)
call ¥ae01(172.0,102.0,2.0,'    d(4) =',0.0,8)
call ¥ae02(190.0,102.0,2.0,dd(4),0.0,1)
call ¥ae02(200.0,102.0,2.0,d(4),0.0,1)
call ¥ae01(172.0,99.0,2.0,'    d(5) =',0.0,8)
call ¥ae02(190.0,99.0,2.0,dd(5),0.0,1)
call ¥ae02(200.0,99.0,2.0,d(5),0.0,1)
call ¥ae01(172.0,96.0,2.0,'    d(6) =',0.0,8)
call ¥ae02(190.0,96.0,2.0,dd(6),0.0,1)
call ¥ae02(200.0,96.0,2.0,d(6),0.0,1)
call ¥ae01(172.0,93.0,2.0,'    d(7) =',0.0,8)
call ¥ae02(190.0,93.0,2.0,dd(7),0.0,1)
call ¥ae02(200.0,93.0,2.0,d(7),0.0,1)
call ¥ae01(172.0,90.0,2.0,'    d(8) =',0.0,8)
call ¥ae02(190.0,90.0,2.0,dd(8),0.0,1)
call ¥ae02(200.0,90.0,2.0,d(8),0.0,1)
call ¥ae01(172.0,87.0,2.0,'    d(9) =',0.0,8)
call ¥ae02(190.0,87.0,2.0,dd(9),0.0,1)
call ¥ae02(200.0,87.0,2.0,d(9),0.0,1)
call ¥ae01(172.0,84.0,2.0,'    d(10)=',0.0,8)
call ¥ae02(190.0,84.0,2.0,dd(10),0.0,1)
call ¥ae02(200.0,84.0,2.0,d(10),0.0,1)
call ¥ae01(132.0,81.0,2.0,' Y0(1) =',0.0,8)
call ¥ae02(150.0,81.0,2.0,Y0(1),0.0,1)
call ¥ae01(132.0,78.0,2.0,' Y0(2) =',0.0,8)
call ¥ae02(150.0,78.0,2.0,Y0(2),0.0,1)
call ¥ae01(132.0,75.0,2.0,' Y0(3) =',0.0,8)
call ¥ae02(150.0,75.0,2.0,Y0(3),0.0,1)
call ¥ae01(132.0,72.0,2.0,' Y0(4) =',0.0,8)
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```
      call ¥ae02(150.0,72.0,2.0,Y0(4),0.0,1)
      call ¥ae01(132.0,69.0,2.0,' Y0(5) =',0.0,8)
      call ¥ae02(150.0,69.0,2.0,Y0(5),0.0,1)
      call ¥ae01(132.0,66.0,2.0,' Y0(6) =',0.0,8)
      call ¥ae02(150.0,66.0,2.0,Y0(6),0.0,1)
      call ¥ae01(132.0,63.0,2.0,' Y0(7) =',0.0,8)
      call ¥ae02(150.0,63.0,2.0,Y0(7),0.0,1)
      call ¥ae01(132.0,60.0,2.0,' Y0(8) =',0.0,8)
      call ¥ae02(150.0,60.0,2.0,Y0(8),0.0,1)
      call ¥ae01(132.0,57.0,2.0,' Y0(9) =',0.0,8)
      call ¥ae02(150.0,57.0,2.0,Y0(9),0.0,1)
      call ¥ae01(132.0,54.0,2.0,' Y0(10)=',0.0,8)
      call ¥ae02(150.0,54.0,2.0,Y0(10),0.0,1)
      call ¥ae01(150.0,50.0,3.0,'    hensa =',0.0,9)
      call ¥ae02(180.0,50.0,2.0,hensa,0.0,5)
      call ¥ae01(150.0,45.0,3.0,'    offset=',0.0,9)
      call ¥ae02(180.0,45.0,2.0,offset,0.0,5)
c
      call vsterm(j,j)
      call gpsltm
*   10 continue
c
      return
      end
```