

2-d closest pairs (ex1.ps)

```
%!PS
%%Creator: 2dclosestPS.c (B.P. Weems)
%%BoundingBox: 0 0 605 755
%%EndComments
40 155 translate
newpath

%Points:
314.835334 397.609009 1 0 360 arc fill
0.000000 214.256479 1 0 360 arc fill
. . .
232.075510 525.857672 1 0 360 arc fill
447.512055 429.167009 1 0 360 arc fill
83.521083 421.754422 1 0 360 arc fill
0.750000 setgray
newpath
0.000000 214.256479 moveto
16.638966 326.371863 lineto
stroke
0.750000 setgray
newpath
32.842926 63.606541 moveto
63.293321 418.320650 lineto
stroke
0.600000 setgray
. . .
0.150000 setgray
newpath
277.751103 399.244138 moveto
281.611778 400.552242 lineto
stroke
0.000000 setgray
newpath
277.751103 399.244138 moveto
281.611778 400.552242 lineto
stroke
0.5 setlinewidth
newpath
279.681440 399.898190 7.860675 0 360 arc
stroke
showpage
%%EOF
```

Generating program (2dclosestPS.c) does scaling:

```
// These map coordinates to 0 ... 530 for emitting PostScript
#define TRANSX(X) (530.0*((X)-xmin)/xdiff)
#define TRANSY(Y) (530.0*((Y)-ymin)/ydiff)
. . .
for (i=0;i<numPoints;i++)
    scanf("%f %f",&Xx[i],&Xy[i]);

xmin=xmax=Xx[0];
ymin=ymax=Xy[0];
for (i=1;i<numPoints;i++)
{
    if (Xx[i]>xmax)
        xmax=Xx[i];
    else if (Xx[i]<xmin)
        xmin=Xx[i];
    if (Xy[i]>ymax)
        ymax=Xy[i];
    else if (Xy[i]<ymin)
        ymin=Xy[i];
}

xdiff=xmax-xmin;
ydiff=ymax-ymin;
. . .
/* Draw the points as little circles. */
printf("newpath\n");
printf("\n%%Points:\n");
for (i=0; i<numPoints; i++)
{
    printf("%f %f 1 0 360 arc fill\n",
        TRANSX(Xx[i]), TRANSY(Xy[i]));
}
}
```

## Triangulated spiral with centroid (ex2.ps)

```

%!PS
%%Creator: tri.c (Joseph O'Rourke)
%%BoundingBox: 0 0 605 755
%%EndComments
0.25 setlinewidth
40 155 translate
/Helvetica findfont
6 scalefont
setfont

% number of vertices = 40
% vnum=    0:    x=    22 y=    -9
% vnum=    1:    x=    20 y=    -4
. . .
%Polygon:
newpath
530.000000    323.888889    moveto
477.000000    471.111111    lineto
344.500000    500.555556    lineto
159.000000    530.000000    lineto
. . .
477.000000    147.222222    lineto
closepath stroke
%Area of polygon = 133.5
newpath
530.000000 323.888889 2.000000 0 360 arc fill
%Diagonal: (1,3)
newpath
477.000000    471.111111    moveto
159.000000    530.000000    lineto
stroke
newpath
326.833333 500.555556 1.000000 0 360 arc fill
328.833333    498.555556    moveto
(0) show
%Diagonal: (4,6)
newpath
0.000000    441.666667    moveto
106.000000    0.000000    lineto
stroke
newpath
44.166667 215.925926 1.000000 0 360 arc fill
46.166667    213.925926    moveto
(1) show
%Diagonal: (6,8)
newpath
106.000000    0.000000    moveto
106.000000    88.333333    lineto
stroke

```

```
newpath
185.500000 39.259259 1.000000 0 360 arc fill
187.500000      37.259259      moveto
(2) show
. . .
%Diagonal: (35,18)
newpath
79.500000      382.777778      moveto
106.000000     323.888889      lineto
stroke
newpath
97.166667 284.629630 1.000000 0 360 arc fill
99.166667      282.629630      moveto
(36) show
% Area of polygon by triangles 133.500000
123.666667 372.962963 1.000000 0 360 arc fill
newpath
125.666667     370.962963     moveto
(37) show
newpath
235.687890 282.497572 3.000000 0 360 arc fill
showpage
%%EOF
```

Graham scan (ex3.ps) with min supporting line (p. 68, #3)

```

%!PS
%%Creator: graham.c (Joseph O'Rourke)
%%BoundingBox: 0 0 605 755
%%EndComments
40 155 translate
/Helvetica findfont
8 scalefont
setfont
newpath

%Points:
106.000000      0.000000      1 0 360      arc      fill
109.000000      -3.000000     moveto
(0) show
newpath
344.500000      29.444444     1 0 360      arc      fill
347.500000      26.444444     moveto
(1) show
newpath
. . .
26.500000      206.111111    1 0 360      arc      fill
29.500000      203.111111    moveto
(35) show
closepath
0.25 setlinewidth
newpath
106.000000      0.000000      moveto
106.000000      0.000000      lineto
stroke
newpath
106.000000      0.000000      moveto
344.500000      29.444444     lineto
stroke
newpath
106.000000      0.000000      moveto
477.000000      147.222222    lineto
stroke
. . .
newpath
106.000000      0.000000      moveto
26.500000      206.111111    lineto
stroke

```

```

1 setlinewidth
newpath
26.500000      206.111111      2  0  360      arc      fill
0.000000      441.666667      2  0  360      arc      fill
159.000000    530.000000      2  0  360      arc      fill
344.500000    500.555556      2  0  360      arc      fill
477.000000    471.111111      2  0  360      arc      fill
530.000000    323.888889      2  0  360      arc      fill
477.000000    147.222222      2  0  360      arc      fill
344.500000    29.444444       2  0  360      arc      fill
106.000000    0.000000        2  0  360      arc      fill

%Hull:
newpath
26.500000      206.111111      moveto
0.000000      441.666667      lineto
159.000000    530.000000      lineto
344.500000    500.555556      lineto
477.000000    471.111111      lineto
530.000000    323.888889      lineto
477.000000    147.222222      lineto
344.500000    29.444444       lineto
106.000000    0.000000        lineto
closepath stroke
% Trace 1 9.426640
% Trace 2 8.049845
% Trace 2 6.363961
% Trace 2 6.471832
% Trace 2 9.284767
% Trace 2 9.486833
% Trace 2 9.682773
% Trace 2 10.270132
2.5 setlinewidth
newpath
% Trace 3 9.847982
159.000000    530.000000      moveto
344.500000    500.555556      lineto
stroke
showpage
%%EOF

```

Quickhull on single page (ex4a.ps)

```

%!PS
%%Creator: quickhull.c (B.P. Weems)
%%BoundingBox: 0 0 605 755
%%EndComments
40 155 translate
newpath
%Points:
440.036900      214.212524      1  0  360      arc      fill
454.704797      157.893738      1  0  360      arc      fill
397.011070      458.595825      1  0  360      arc      fill
. . .
195.571956      187.058824      1  0  360      arc      fill
342.250923      388.197343      1  0  360      arc      fill
0.25 setlinewidth
newpath
530.000000      204.155598      moveto
0.000000      428.425047      lineto
stroke
newpath
530.000000      204.155598      moveto
0.000000      428.425047      lineto
stroke
. . .
newpath
427.324723      110.626186      moveto
530.000000      204.155598      lineto
stroke
newpath
530.000000      204.155598      2  0  360      arc      fill
506.531365      405.294118      2  0  360      arc      fill
410.701107      495.806452      2  0  360      arc      fill
123.210332      530.000000      2  0  360      arc      fill
0.000000      428.425047      2  0  360      arc      fill
0.977860      379.146110      2  0  360      arc      fill
36.180812      222.258065      2  0  360      arc      fill
89.963100      90.512334      2  0  360      arc      fill
141.789668      0.000000      2  0  360      arc      fill
427.324723      110.626186      2  0  360      arc      fill

```

```

%Hull:
2 setlinewidth
newpath
530.000000      204.155598      moveto
506.531365      405.294118      lineto
410.701107      495.806452      lineto
123.210332      530.000000      lineto
0.000000        428.425047      lineto
0.977860        379.146110      lineto
36.180812       222.258065      lineto
89.963100       90.512334       lineto
141.789668      0.000000        lineto
427.324723      110.626186      lineto
closepath stroke
showpage
%%EOF

```

Quickhull with multi-page output (ex4b.ps)

```

%!PS
%%Creator: quickhull.c (B.P. Weems)
%%BoundingBox: 0 0 605 755
%%EndComments
40 155 translate
newpath
%Points:
440.036900 214.212524 1 0 360 arc fill
454.704797 157.893738 1 0 360 arc fill
397.011070 458.595825 1 0 360 arc fill
. . .
195.571956 187.058824 1 0 360 arc fill
342.250923 388.197343 1 0 360 arc fill
showpage
40 155 translate
0.25 setlinewidth
newpath
530.000000 204.155598 moveto
0.000000 428.425047 lineto
stroke
440.036900 214.212524 1 0 360 arc fill
454.704797 157.893738 1 0 360 arc fill
397.011070 458.595825 1 0 360 arc fill
. . .
195.571956 187.058824 1 0 360 arc fill
342.250923 388.197343 1 0 360 arc fill
showpage
40 155 translate
0.25 setlinewidth

```

```

newpath
530.000000 204.155598 moveto
0.000000 428.425047 lineto
410.701107 495.806452 lineto
closepath stroke
397.011070 458.595825 1 0 360 arc stroke
448.837638 435.464896 1 0 360 arc fill
327.583026 386.185958 1 0 360 arc stroke
. . .
410.701107 495.806452 1 0 360 arc stroke
342.250923 388.197343 1 0 360 arc stroke
showpage
40 155 translate
0.25 setlinewidth
newpath
530.000000 204.155598 moveto
410.701107 495.806452 lineto
506.531365 405.294118 lineto
closepath stroke
newpath
448.837638 435.464896 1 0 360 arc stroke
506.531365 405.294118 1 0 360 arc stroke
showpage
40 155 translate
0.25 setlinewidth
newpath
410.701107 495.806452 moveto
0.000000 428.425047 lineto
123.210332 530.000000 lineto
closepath stroke
newpath
123.210332 530.000000 1 0 360 arc stroke
96.808118 473.681214 1 0 360 arc stroke
showpage
. . .
40 155 translate
0.25 setlinewidth
newpath
530.000000 204.155598 2 0 360 arc fill
506.531365 405.294118 2 0 360 arc fill
410.701107 495.806452 2 0 360 arc fill
123.210332 530.000000 2 0 360 arc fill
0.000000 428.425047 2 0 360 arc fill
0.977860 379.146110 2 0 360 arc fill
36.180812 222.258065 2 0 360 arc fill
89.963100 90.512334 2 0 360 arc fill
141.789668 0.000000 2 0 360 arc fill
427.324723 110.626186 2 0 360 arc fill

```

```
%Hull:  
2 setlinewidth  
newpath  
530.000000 204.155598 moveto  
506.531365 405.294118 lineto  
410.701107 495.806452 lineto  
123.210332 530.000000 lineto  
0.000000 428.425047 lineto  
0.977860 379.146110 lineto  
36.180812 222.258065 lineto  
89.963100 90.512334 lineto  
141.789668 0.000000 lineto  
427.324723 110.626186 lineto  
closepath stroke  
showpage  
%%EOF
```