```
<< LinearAlgebra`GaussianElimination`
```

```
<< DiscreteMath`Combinatorica`
```

```
HDS = Import["C:\FruitJuiceData\HDS58OneScore.txt", "Table"]
```

```
{{3.46792}, {2.6878}, {2.22352}, {1.22042}, {1.93336}, {2.14273}, {0.78093}, {-0.13922},
 {-1.8084}, {-0.78023}, {-0.89167}, {-3.91192}, {-3.36732}, {-4.12941}, {-3.98326},
 {1.69646}, {2.53893}, {2.55311}, {3.41195}, {1.98358}, {3.79083}, {3.0921}, {0.75395},
 {0.23564}, {0.23232}, {-0.23225}, {-0.92849}, {-2.27088}, {-2.66321}, {-1.85711},
 {-2.54427}, {-2.5779}, {-2.13457}, {-2.71887}, {-2.49429}, {-4.00086}, {2.51508},
 {2.06417}, {2.29071}, {0.64918}, {0.87162}, {-1.74798}, {-3.14314}, {-2.9219},
 {1.08557}, {-0.5061}, {-0.96837}, {2.54391}, {3.52917}, {2.80737}, {0.97592},
 {0.50745}, {0.79964}, {-1.72357}, {-2.71192}, {1.75972}, {0.13202}, {-0.11994}}
```

```
MatrixForm[HDS]
```

$$\begin{pmatrix} 3.46792 \\ 2.6878 \\ 2.22352 \\ 1.22042 \\ 1.93336 \\ 2.14273 \\ 0.78093 \\ -0.13922 \\ -1.8084 \\ -0.78023 \\ -0.89167 \\ -3.91192 \\ -3.36732 \\ -4.12941 \\ -3.98326 \\ 1.69646 \\ 2.53893 \\ 2.55311 \\ 3.41195 \\ 1.98358 \\ 3.79083 \\ 3.0921 \\ 0.75395 \\ 0.23564 \\ 0.23232 \\ -0.23225 \\ -0.92849 \\ -2.27088 \\ -2.66321 \\ -1.85711 \\ -2.54427 \\ -2.5779 \\ -2.13457 \\ -2.71887 \\ -2.49429 \\ -4.00086 \\ 2.51508 \\ 2.06417 \end{pmatrix}$$

$$\begin{pmatrix} 2.06417 \\ 2.29071 \\ 0.64918 \\ 0.87162 \\ -1.74798 \\ -3.14314 \\ -2.9219 \\ 1.08557 \\ -0.5061 \\ -0.96837 \\ 2.54391 \\ 3.52917 \\ 2.80737 \\ 0.97592 \\ 0.50745 \\ 0.79964 \\ -1.72357 \\ -2.71192 \\ 1.75972 \\ 0.13202 \\ -0.11994 \end{pmatrix}$$

```
theSDs = HDS;; Let[t = KSubsets[theSDs, 2]]; ;
For[j = 1, j < 59, j++, Let[{{l}} = Take[theSDs, {j}];; testpoint = {l}; ; totalindic = 0; ;
  For[i = 1, i < 1654, i++, Let[{{x, y}} = Take[t, {i}], X = ((1  1
                                                               x  y))];; Clear[a, b]; ;
    {{a, b}} = {a, b} /. Solve[{a + b == 1, a * x + b * y == testpoint}, {a, b}]; ;
    If[{a > 0, b > 0} == {True, True}, {indic = 1, answer = inside}, {indic = 0,
      answer = outside}]; ; totalindic = totalindic + indic; ; SD = totalindic / 1653 ]]; ;
  Print["SD", j, " is ", SD, " = ", N[SD]]];; f[j] = N[SD]]; ;
Export["C:\FruitJuiceData\HDS58PC1.xls", {Table[f[k], {k, j - 1}]}, "Table"]
```

SD1 is $\frac{110}{1653} = 0.0665457$

SD2 is $\frac{102}{551} = 0.185118$

SD3 is $\frac{180}{551} = 0.326679$

SD4 is $\frac{38}{87} = 0.436782$

SD5 is $\frac{8}{19} = 0.421053$

SD6 is $\frac{572}{1653} = 0.346038$

SD7 is $\frac{793}{1653} = 0.479734$

SD8 is $\frac{800}{1653} = 0.483969$

SD9 is $\frac{219}{551} = 0.397459$

SD10 is $\frac{257}{551} = 0.466425$

SD11 is $\frac{757}{1653} = 0.457955$

SD12 is $\frac{163}{1653}$ = 0.0986086

SD13 is $\frac{71}{551}$ = 0.128857

SD14 is $\frac{1}{1653}$ = 0.000604961

SD15 is $\frac{37}{551}$ = 0.0671506

SD16 is $\frac{234}{551}$ = 0.424682

SD17 is $\frac{467}{1653}$ = 0.282517

SD18 is $\frac{117}{551}$ = 0.212341

SD19 is $\frac{54}{551}$ = 0.0980036

SD20 is $\frac{632}{1653}$ = 0.382335

SD21 is $\frac{2}{1653}$ = 0.00120992

SD22 is $\frac{214}{1653}$ = 0.129462

SD23 is $\frac{800}{1653}$ = 0.483969

SD24 is $\frac{272}{551}$ = 0.493648

SD25 is $\frac{28}{57}$ = 0.491228

SD26 is $\frac{794}{1653}$ = 0.480339

SD27 is $\frac{746}{1653}$ = 0.451301

SD28 is $\frac{575}{1653}$ = 0.347852

SD29 is $\frac{458}{1653}$ = 0.277072

SD30 is $\frac{635}{1653}$ = 0.38415

SD31 is $\frac{169}{551}$ = 0.306715

SD32 is $\frac{157}{551}$ = 0.284936

SD33 is $\frac{604}{1653}$ = 0.365396

SD34 is $\frac{352}{1653}$ = 0.212946

SD35 is $\frac{544}{1653}$ = 0.329099

SD36 is $\frac{1}{29}$ = 0.0344828

SD37 is $\frac{157}{551}$ = 0.284936

SD38 is $\frac{605}{1653}$ = 0.366001

SD39 is $\frac{509}{1653}$ = 0.307925

SD40 is $\frac{270}{551}$ = 0.490018

SD41 is $\frac{772}{1653}$ = 0.46703

SD42 is $\frac{695}{1653}$ = 0.420448

SD43 is $\frac{278}{1653}$ = 0.168179

SD44 is $\frac{103}{551}$ = 0.186933

SD45 is $\frac{743}{1653}$ = 0.449486

SD46 is $\frac{9}{19}$ = 0.473684

SD47 is $\frac{243}{551}$ = 0.441016

SD48 is $\frac{131}{551}$ = 0.23775

SD49 is $\frac{64}{1653}$ = 0.0387175

SD50 is $\frac{14}{87}$ = 0.16092

SD51 is $\frac{761}{1653}$ = 0.460375

SD52 is $\frac{811}{1653}$ = 0.490623

SD53 is $\frac{263}{551}$ = 0.477314

SD54 is $\frac{237}{551}$ = 0.430127

SD55 is $\frac{397}{1653}$ = 0.240169

SD56 is $\frac{12}{29}$ = 0.413793

SD57 is $\frac{271}{551}$ = 0.491833

SD58 is $\frac{270}{551}$ = 0.490018

C:\FruitJuiceData\HDS58PC1.xls