

```

h = Flatten[Table[x^n y^m, {n, 0, 1}, {m, 0, 1}]]
{1, y, x, x y}

M = Flatten[Table[{a, b}, {a, 0, 1}, {b, 0, 1}], 1]; M // MatrixForm


$$\begin{pmatrix} 0 & 0 \\ 0 & 1 \\ 1 & 0 \\ 1 & 1 \end{pmatrix}$$


Co = Inverse[Transpose[Table[h /. x → M[[i, 1]] /. y → M[[i, 2]], {i, 4}]]];
Co // MatrixForm

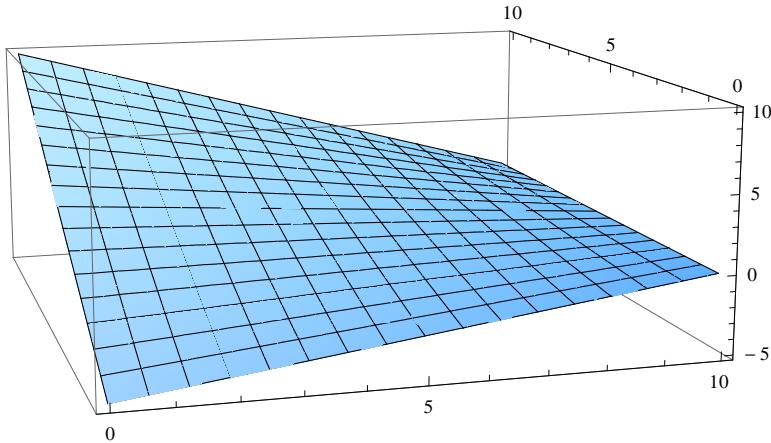

$$\begin{pmatrix} 1 & -1 & -1 & 1 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & -1 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$


0.1

Table[s.Co.h /. x → xx / b /. y → yy / b /. yy → M[[i, 2]] b /. xx → M[[i, 1]] b, {i, 4}]
{1, 10, 0, 0}

b = 10; s = {-5, 10, 0, 0};
Plot3D[s.Co.h /. x → xx / b /. y → yy / b, {xx, 0, b}, {yy, 0, b}]

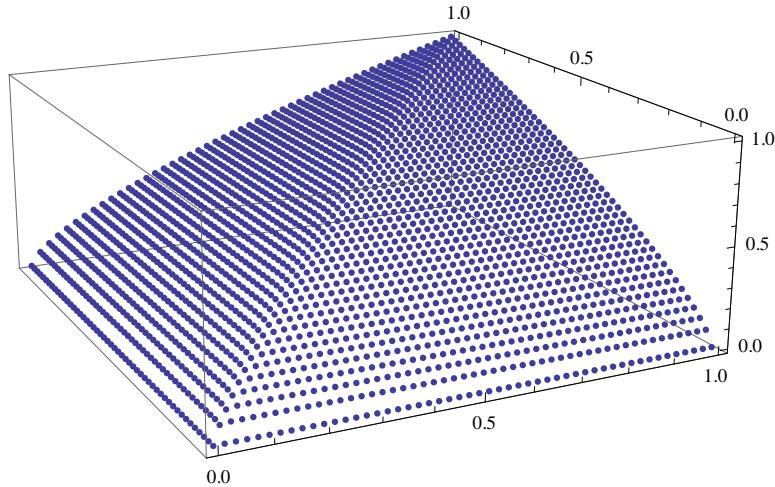
```



```

f[a0_, b0_] := Module[{a = a0, b = b0, x, y, h, s},
  S = Select[M2, (#[[1]] == a && #[[2]] == b) &];
  If[Length[S] != 0,
    S[[1, 3]],
    h = {1, y, x, x y};
    Transpose[#[[3]].Co.h /. x -> (a - #[[1, 1]]) / (#[[3, 1]] - #[[1, 1]]) /.
      y -> (b - #[[1, 2]]) / (#[[2, 2]] - #[[1, 2]]) &[
      Select[M2, (Abs[#[[1]] - a] < 1/nx && Abs[#[[2]] - b] < 1/ny) &]]];
  A = 20; nx = 50; ny = 50; of = 0.00001;
  M2 = Flatten[Table[{x / nx + of, y / ny + of, f2[x / nx + of, y / ny + of, 0.999, A]}, {
    {x, 0, nx}, {y, 0, ny}}] // N, 1];
  ListPointPlot3D[M2]

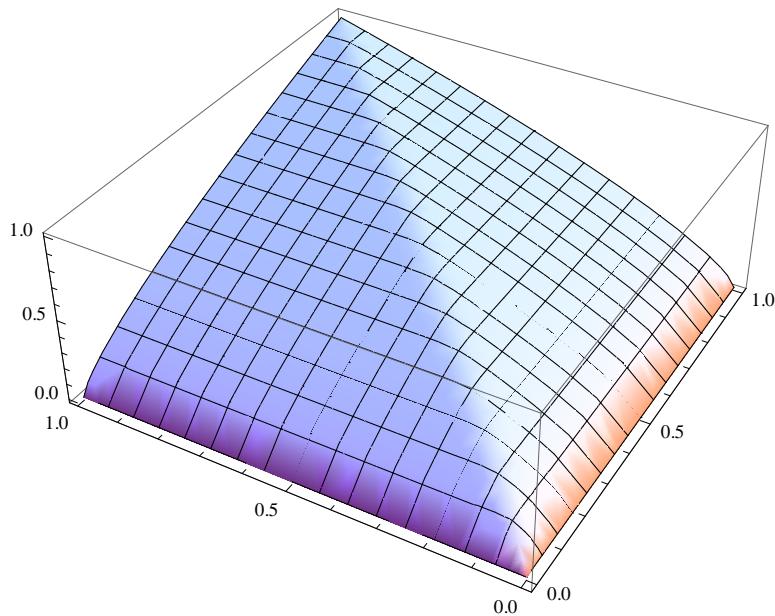
```



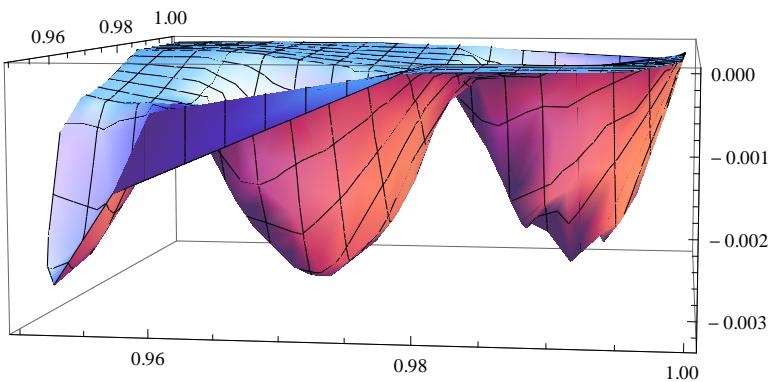
```

{#1, #2, f[#1, #2]} & @@@ RandomReal[1, {5, 2}]
{{0.0375661, 0.300218, 0.106196},
 {0.019181, 0.214504, 0.0666604}, {0.519695, 0.93139, 0.639027},
 {0.36837, 0.41584, 0.503508}, {0.595656, 0.0711941, 0.164349}}
tt = {#1, #2, f[#1, #2]} & @@@ RandomReal[{0.95, 1}, {500, 2}];

```

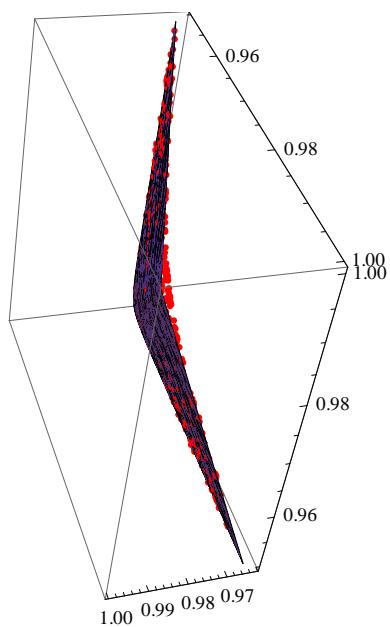


```
ttt = Sort[Table[{tt[[i, 1]], tt[[i, 2]],
  (tt[[i, 3]] - f2[tt[[i, 1]], tt[[i, 2]], 0.999, A])}, {i, 1, Length[tt]}]];
ListPlot3D[ttt, PlotRange → All]
```



```
ttt[[100]]
-0.0010872
```

```
Show[ListPointPlot3D[tt, PlotStyle -> Red],  
Plot3D[f2[x, y, 0.999, A], {x, 0.95, 1}, {y, 0.95, 1}]]
```



```
p[k_] := 250! / k! / (250 - k)! * 0.04^k * (1 - 0.04)^(250 - k)
```

```
Sum[p[i], {i, 0, 5}]
```

```
0.0632933
```