```
> L1 := [[0, 3],[3, 0],[1, 2],[2, 1]];
```

$$L1 := [[0, 3], [3, 0], [1, 2], [2, 1]] \quad (1)$$

```
> L2 := [[0, 0], [1, 0], [0, 1], [1, 1], [0, 2], [2, 0]];
```

$$L2 := [[0, 0], [1, 0], [0, 1], [1, 1], [0, 2], [2, 0]] \quad (2)$$

```
> #we study the case that a_11+a_21 = 3,  b_11+b_21 < 3, and a_12+
  a_22 = 3
  #note it is symmetric to  a_11+a_21 < 3, b_11+b_21 = 3, and a_12+
  a_22 = 3
> p := []:
  S1 := []:
  S2 := []:
  count := 0:
  for i from 1 to nops(L1) do
    for j from 1 to nops(L2) do
       for k from 1 to nops(L1) do
           t := []:
           p := [op(L1[i]), op(L2[j]), op(L1[k])];
           if p[1]=p[3] or p[2]=p[4] then
                    next:
           fi:
            #t record the condition type
           if    max(p[1], p[3])<p[5] then
              t := [op(t), 1]:
           fi:
           if max(p[2], p[4])<p[6]  then
              t := [op(t), 2]:
           fi:
           if min(p[1], p[3])>p[5] and p[5]>0 then
              t := [op(t), 3]:
           fi:
           if min(p[2], p[4])>p[6] and p[6]>0 then
              t := [op(t), 4]:
           fi:
           if (((has(t, 1) or has(t, 3)) and p[1]<>p[3])
             or
               ((has(t, 2) or has(t, 4)) and p[2]<>p[4]))
             and p[1]*p[3]*p[5]=0
             and p[2]*p[4]*p[6]=0
           then
              count := count + 1:
              S1 := [op(S1), p];
              S2 := [op(S2), t];
             # print(p); print(t);
           fi:
       od:
    od:
  od:
  count;
```

$$18 \quad (3)$$

```
> sym := {}:
  for j from 1 to nops(S1) do
      for i from 1 to nops(S1) do
           p1 := S1[j]:  p2 := S1[i]:
           if p1[1]=p2[2] and p1[2]=p2[1] and
              p1[3]=p2[4] and p1[4]=p2[3] and
              p1[5]=p2[6] and p1[6]=p2[5] then
              sym := sym union {{j, i}}:
           fi:
      od:
  od:
  sym;
```

$$\{\{1,5\},\{2,6\},\{3,7\},\{4,8\},\{9,15\},\{10,14\},\{11,16\},\{12,17\},\{13,18\}\} \quad \textbf{(4)}$$

```
> S3 := []:
  S4 := []:
  for i from 1 to nops(sym) do
      if S2[sym[i][1]]=[1] then
            S3 := [op(S3), S1[sym[i][1]]]:
            S4 := [op(S4), S2[sym[i][1]]]:
      else
            S3 := [op(S3), S1[sym[i][2]]]:
            S4 := [op(S4), S2[sym[i][2]]]:

      fi:
  od:
  for i from 1 to nops(S3) do
           print(S3[i], S4[i]);
  od:

  sym2 := {}:
  for j from 1 to nops(S3) do
      for i from 1 to nops(S3) do
           p1 := S3[j]:  p2 := S3[i]:
           if p1[1]=p2[3] and p1[2]=p2[4] and
              p1[3]=p2[1] and p1[4]=p2[2]
           then
              sym2 := sym2 union {{j, i}}:
           fi:
      od:
  od:
  nops(S3);
  #The 9 elements are listed in the first column of Table 3
  #For instance, the first element means [a11, a21, b11, b21, a12,
  a22] = [0, 3, 1, 0, 3, 0]
```

$$[0,3,1,0,3,0],[1]$$
$$[0,3,1,0,2,1],[1]$$
$$[0,3,1,1,3,0],[1]$$
$$[0,3,2,0,3,0],[1]$$
$$[2,1,0,0,3,0],[1]$$
$$[1,2,0,0,3,0],[1]$$
$$[1,2,0,0,2,1],[1]$$

$$[1, 2, 0, 1, 3, 0], [1]$$
$$[2, 1, 0, 2, 3, 0], [1]$$
$$9 \tag{5}$$

```
> flag := [1$nops(S3)]:
  for i from 1 to nops(S3) do
           if has(S4[i], 1) and S3[i][6]=0
               and (S3[i][3]-S3[i][1])*(S3[i][4]-S3[i][2])<0 then
              flag[i] := 0:
           fi:
           if has(S4[i], 2) and S3[i][5]=0
               and (S3[i][3]-S3[i][1])*(S3[i][4]-S3[i][2])<0 then
              flag[i] := 0:
           fi:
           if flag[i]=1 then
               print(S3[i], S4[i]);
           fi:
  od:
  #This is a program to check if \pi_{\sigma}^{-1}(\sigma)\cap C =
  \emptyset in a simple way.
  #For these 5 elements from the above 9 might,  \pi_{\sigma}^{-1}
  (\sigma)\cap C might not be empty
  #We proved in the paper (see Page 19, Lemma 5.5) that for [0, 3,
  1, 0, 2, 1], \pi_{\sigma}^{-1}(\sigma)\cap C is still empty
  #The last 4 are recored in the bold/colored cells. For these
  elements, \pi_{\sigma}^{-1}(\sigma)\cap C are non-empty.
```

$$[0, 3, 1, 0, 2, 1], [1]$$
$$[2, 1, 0, 0, 3, 0], [1]$$
$$[1, 2, 0, 0, 3, 0], [1]$$
$$[1, 2, 0, 0, 2, 1], [1]$$
$$[1, 2, 0, 1, 3, 0], [1] \tag{6}$$