In[292]:=
```
A1 = {{7, 5}, {10, 7}};
A2 = {{10, 7, 8, 7}, {7, 5, 6, 5}, {8, 6, 10, 9}, {7, 5, 9, 10}};
A3 = {{1, 2}, {2, 2}};
A4 = Table[1 / (i + j - 1), {i, 1 , 10}, {j, 1, 10}];
A5 = Table[ If[i == j, 4, If[i == j + 1 || i == j - 1, 1, 0]], {i, 1, 10}, {j, 1, 10}];

eigenvalue[A_] := N[Max[Abs[Eigenvalues[A]]]];(*A5 eigenvalues*)
eigenvalue[A4]
eigenvalue[A5]
```

Out[337]= 1.75192

Out[338]= 5.91899

In[250]:=
```
condition1[A_, size_] := Max[Sum[Abs[Inverse[A][[All, i]]], {i, 1, size}]] *
   Max[Sum[Abs[A[[All, i]]], {i, 1, size}]];
condition1[A1, 2]
condition1[A2, 4]
condition1[A3, 2]
condition1[A4, 10]
condition1[A5, 10]
```

Out[251]= 289

Out[252]= 4488

Out[253]= 8

Out[254]= 35 357 439 251 992

Out[255]= $\frac{1710}{571}$

```
conditionInf[A_, size_] :=
  Max[Sum[Abs[Inverse[A][[i, All]]], {i, 1, size}]] * Max[Sum[Abs[A[[All, i]]], {i, 1, size}]];
```

```
conditionInf[A1, 2]
conditionInf[A2, 4]
conditionInf[A3, 2]
conditionInf[A4, 10]
conditionInf[A5, 10]
```

Out[257]= 289

Out[258]= 4488

Out[259]= 8

Out[260]= 35 357 439 251 992

Out[261]= $\frac{1710}{571}$

In[367]:=
```
condition2[A_, size_] :=
  Sqrt[eigenvalue[A . Transpose[A]]] * Sqrt[eigenvalue[Inverse[A] . Transpose[Inverse[A]]]];
```

In[371]:=
```
condition2[A1, 2]
conditionF[A_, size_] := Sqrt[Sum[A[[j, i]], {j, 1, size}, {i, 1, size}]^2] *
   Sqrt[Sum[Transpose[A][[j, i]], {j, 1, size}, {i, 1, size}]^2];
conditionF[
 A1,
 2]
```

Out[371]= 222.996

Out[373]= 841

In[436]:=
```
(*B3*)
cnd1[A_] = N[Norm[A, 1] * Norm[Inverse[A], 1]];
cnd2[A_] = N[Norm[A, 2] * Norm[Inverse[A], 2]];
cndInf[A_] = N[Norm[A, Infinity] * Norm[Inverse[A], Infinity]];
cndF[A_] = N[Norm[A, Frobenius] * Norm[Inverse[A], Frobenius]];
```

In[446]:=
```
cnd1[A1]
cnd1[A2]
cnd1[A3]
cnd1[A4]
cndInf[A5]
cndInf[A1]
cndInf[A2]
cndInf[A3]
cndInf[A4]
cndInf[A5]
cndF[A1]
cndF[A2]
cndF[A3]
cndF[A4]
cndF[A5]
```

Out[446]= 289.

Out[447]= 4488.

Out[448]= 8.

Out[449]= 3.53574×10^{13}

Out[450]= $\frac{1710}{571}$

Out[451]= 289

Out[452]= 4488

Out[453]= 8

Out[454]= 35 357 439 251 992

Out[455]= $\frac{1710}{571}$

Out[456]= 223

Out[457]= $6\sqrt{251\,599}$

Out[458]= $\frac{13}{2}$

Out[459]= $\frac{5\sqrt{\frac{103\,273\,907\,287\,453\,322\,748\,996\,521\,494\,065\,913\,651}{14}}}{831\,402}$

Out[460]= $\frac{2\sqrt{13\,050\,208\,401\,319}}{564\,719}$

Out[399]= 223

Set : Tag Times in Norm $\begin{pmatrix} 7 & 5 \\ 10 & 7 \end{pmatrix}$ is Protected .

Out[72]= 7