```
syms s
A = [ 2 5; 4 1]
```

```
A =
     2     5
     4     1
```

```
B = [5;2]
```

```
B =
     5
     2
```

```
C = [2 -1]
```

```
C =
     2    -1
```

```
D = 0
```

```
D = 0
```

```
[num, den] = ss2tf(A,B,C,D)
```

```
num =
         0    8.0000   -6.0000
den =
     1    -3   -18
```

```
G = tf(num,den)
```

```
G =

     8 s - 6
  --------------
  s^2 - 3 s - 18

Continuous-time transfer function.
```

```
%bless up
```

```
%in ccf
```

```
Ao = [0 1; 18 3]
```

```
Ao =
     0     1
```

```
    18     3
```

```
Bo = [0;1]
```

```
Bo =
     0
     1
```

```
cntrb = [B A*B] %given matrices
```

```
cntrb =
     5    20
     2    22
```

```
cntrbprime = [Bo Ao*Bo] %in ccf
```

```
cntrbprime =
     0     1
     1     3
```

```
T = cntrbprime*inv(cntrb)
```

```
T =
   -0.0286    0.0714
    0.2286   -0.0714
```

```
K = [-3/35 47/7]
```

```
K =
   -0.0857    6.7143
```

```
%sanity check
eigs(A-B*K)
```

```
ans =
  -5.0000 + 8.0000i
  -5.0000 - 8.0000i
```