

```
% Block Diagram Reduction
```

```
G1 = tf([1], [1 10])
```

```
G2 = tf([1], [1 1])
```

```
G3 = tf([1 0 1], [1 4 4])
```

```
G4 = tf([1 1], [1 6])
```

```
H1 = tf([1 1], [1 2])
```

```
H2 = tf([2], [1])
```

```
H3 = tf([1], [1])
```

```
H2 = H2/G4
```

```
sys = feedback(series(G3,G4), H1, +1)
```

```
sys = feedback(series(G2, sys), H2, -1)
```

```
sys = feedback(series(G1, sys), H3, -1)
```

```
G1 =
```

$$\frac{1}{s + 10}$$

Continuous-time transfer function.

```
G2 =
```

$$\frac{1}{s + 1}$$

Continuous-time transfer function.

```
G3 =
```

$$\frac{s^2 + 1}{s^2 + 4s + 4}$$

Continuous-time transfer function.

```
G4 =
```

$$\frac{s + 1}{s + 6}$$

Continuous-time transfer function.

```
H1 =
```

$$\frac{s + 1}{s + 2}$$

Continuous-time transfer function.

H2 =

$$2$$

Static gain.

H3 =

$$1$$

Static gain.

H2 =

$$\frac{2s + 12}{s + 1}$$

Continuous-time transfer function.

sys =

$$\frac{s^4 + 3s^3 + 3s^2 + 3s + 2}{10s^3 + 46s^2 + 78s + 47}$$

Continuous-time transfer function.

sys =

$$\frac{s^5 + 4s^4 + 6s^3 + 6s^2 + 5s + 2}{12s^5 + 84s^4 + 222s^3 + 291s^2 + 212s + 71}$$

Continuous-time transfer function.

sys =

$$\frac{s^5 + 4s^4 + 6s^3 + 6s^2 + 5s + 2}{12s^6 + 205s^5 + 3128s^4 + 2196s^3 + 712s^2 + 128s + 7}$$

