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`% 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 =*

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

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 =

$$\frac{s^5 + 4s^4 + 6s^3 + 6s^2 + 5s + 2}{12s^6 + 205s^5 + 1066s^4 + 2517s^3 + 3128s^2 + 2196s + 712}$$

