
```

% Effect of addition on closed loop poles
sys = tf([1], [1 3 6])
p = [-1 -5 -10 -20]
for i=1:4
    sys_new = tf([1], [1 -p(i)])*sys
    subplot(2, 2, i)
    step(sys_new)
    stepinfo(sys_new)
end

```

```
sys =
```

$$\frac{1}{s^2 + 3s + 6}$$

Continuous-time transfer function.

```
p =
```

```

-1    -5    -10   -20

```

```
sys_new =
```

$$\frac{1}{s^3 + 4s^2 + 9s + 6}$$

Continuous-time transfer function.

```
ans =
```

```
struct with fields:
```

```

    RiseTime: 2.0388
    SettlingTime: 4.3619
    SettlingMin: 0.1503
    SettlingMax: 0.1667
    Overshoot: 0
    Undershoot: 0
    Peak: 0.1667
    PeakTime: 12.8484

```

```
sys_new =
```

$$\frac{1}{s^3 + 4s^2 + 9s + 6}$$

$$s^3 + 8 s^2 + 21 s + 30$$

Continuous-time transfer function.

ans =

struct with fields:

```

    RiseTime: 0.8705
    SettlingTime: 2.6518
    SettlingMin: 0.0301
    SettlingMax: 0.0358
    Overshoot: 7.4106
    Undershoot: 0
    Peak: 0.0358
    PeakTime: 1.8789

```

sys_new =

$$\frac{1}{s^3 + 13 s^2 + 36 s + 60}$$

Continuous-time transfer function.

ans =

struct with fields:

```

    RiseTime: 0.7990
    SettlingTime: 2.5417
    SettlingMin: 0.0152
    SettlingMax: 0.0181
    Overshoot: 8.4569
    Undershoot: 0
    Peak: 0.0181
    PeakTime: 1.7500

```

sys_new =

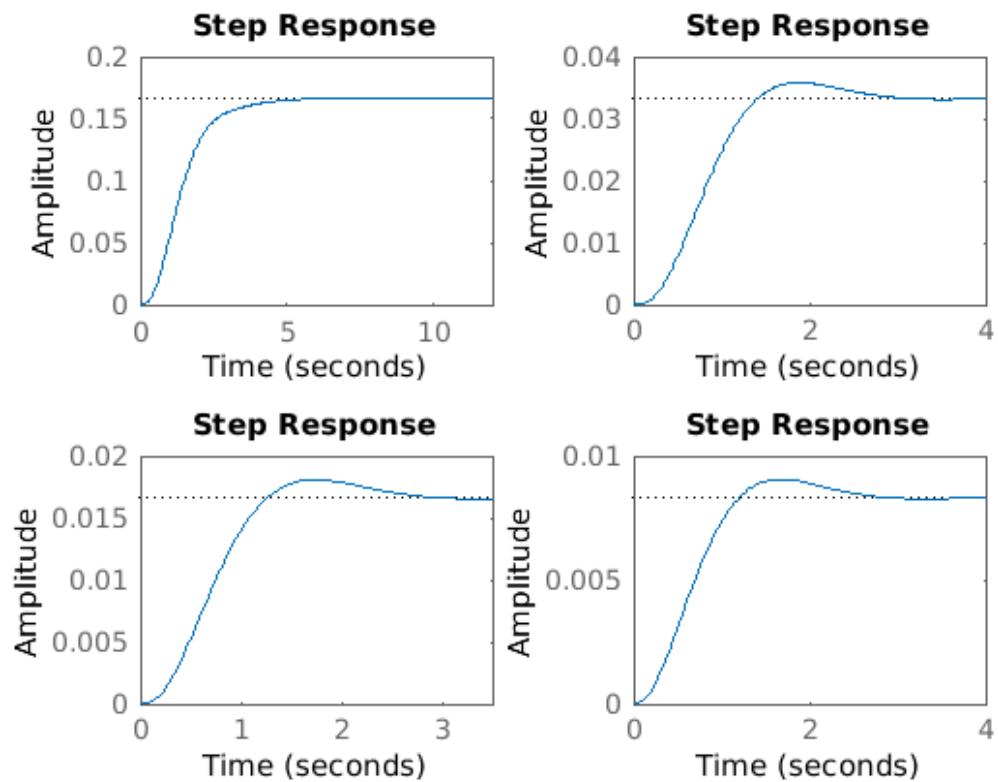
$$\frac{1}{s^3 + 23 s^2 + 66 s + 120}$$

Continuous-time transfer function.

ans =

struct with fields:

RiseTime: 0.7770
SettlingTime: 2.4869
SettlingMin: 0.0076
SettlingMax: 0.0091
Overshoot: 8.6970
Undershoot: 0
Peak: 0.0091
PeakTime: 1.6886



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