

# Controladores digitais com estrutura RST

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GitHub: <https://github.com/JuliaOli/Controle-II.git>

```
clear all
clc

Ts = 1;
num = [1];
den = [10 1];

G = tf(num, den)
```

G =

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

Continuous-time transfer function.

```
G_z = c2d(G, Ts)
```

G\_z =

$$\frac{0.09516}{z - 0.9048}$$

Sample time: 1 seconds  
Discrete-time transfer function.

```
% Polos das funcoes
num_g_z = cell2mat(G_z.Numerator);
den_g_z = cell2mat(G_z.Denominator);
den_g = cell2mat(G.Denominator);
```

```
%% Agora precisa achar os dados
```

```
%Calcular Polo desejado
pol = exp(-Ts/den_g(1))
```

pol = 0.9048

```
% encontrar os n's
n_a = length(den_g_z)-1;

n_b = length(num_g_z)-1;

d = length(num_g_z)-1;

n_r = n_b + d -1;
n_s = n_a - 1;
```

```
% Polinomio desejado
P = [1 -pol]
```

```
P =
    1.0000    -0.9048
```

•

```
%Encontrando o R
R = P(1)
```

```
R = 1
```

```
%Encontrando o S
syms s
S = (num_g_z(2)*s + den_g_z(2)*R) == -pol;
solve_S = solve(S)
```

```
solve_S = 0
```

```
S_s = 0;
% Encontrar T: P = 1 - 0,9048 // B = 0,095 // T = P(1)/B(1)
T = (P(1) + P(2))/num_g_z(2);
```

```
%Funcao final
G_c =feedback(G_z*(1/R),S_s)
```

```
G_c =
    0.09516
    -----
    z - 0.9048
```

```
Sample time: 1 seconds
Discrete-time transfer function.
```

```
step(G_c)
```

