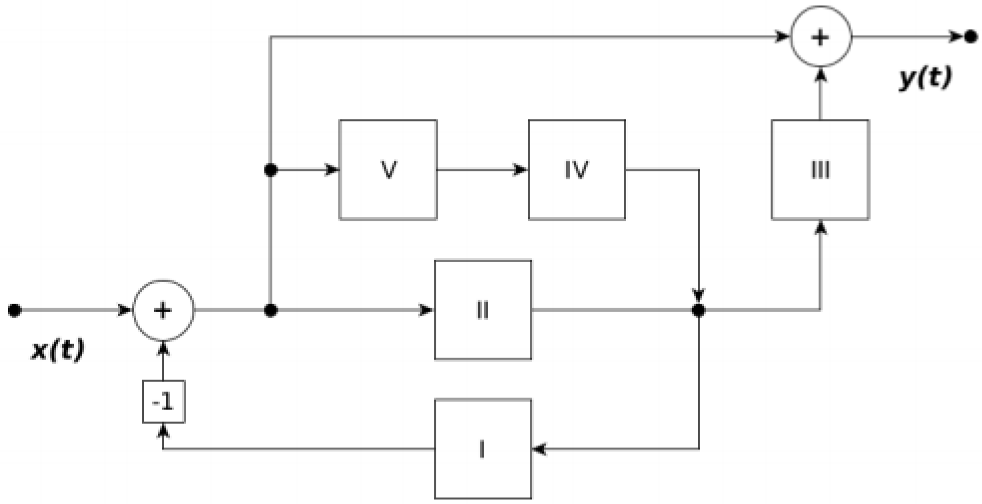
1.

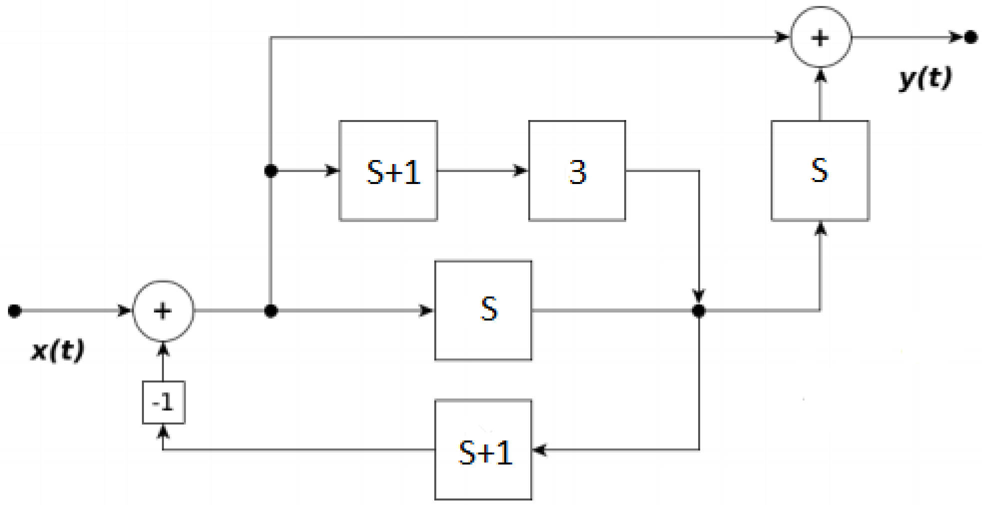
MAT1: 11621EAU018, KANO1: 3, KCUR1: 1, KNUM1: 1

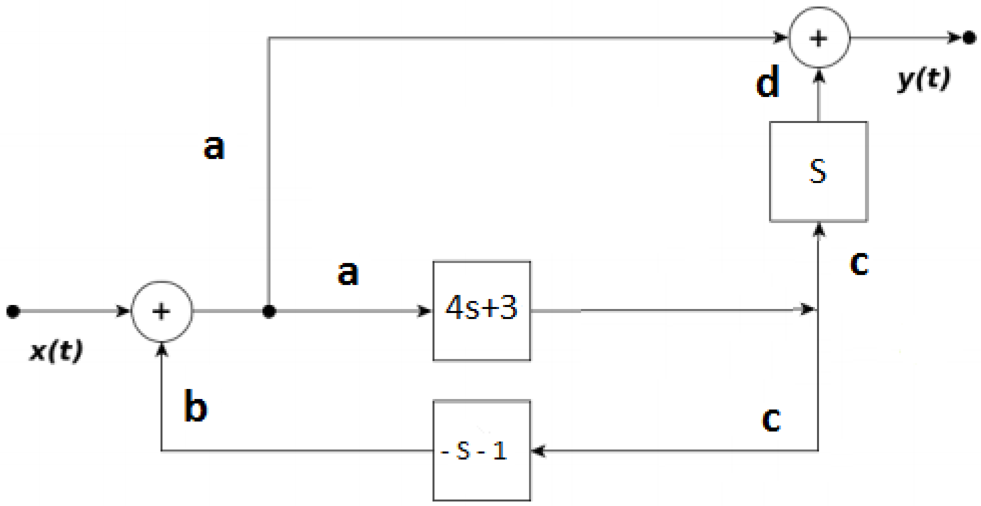
MAT2: 11621EEL007, KANO2: 3, KCUR2: 4, KNUM2: 8

MAT3: 11621ECP002, KANO3: 3, KCUR3: 3, KNUM3: 3

2.







A partir do circuito acima, obtivemos o sistema:

$$\begin{cases} a = x(S) + b \\ y(S) = d + a \\ d = c \cdot S \\ c = (4S + 3)a \\ b = c(-S - 1) \end{cases}$$

$$H(S) = \frac{y(S)}{x(S)}$$

Substituindo y(S) e x(S):

$$H(S) = \frac{d + a}{a - b}$$

$$H(S) = \frac{(c \cdot S) + a}{a - c(-S - 1)}$$

$$H(S) = \frac{4S^2 + 3S + 1}{4S^2 + 7S + 4}$$

As raízes de $4S^2 + 7S + 4$ são $S_1 = -0{,}875 + 0{,}4841i$ e $S_2 = -0{,}875 - 0{,}4841i$. Quando S for igual a um destes dois valores, a função de transferência tende a infinito. Então estes pontos são polos do sistema, que é causal e estável.

3.

I. Usando o método de kirchhoff para análise de malhas, obtivemos o Y(s) e X(s) que com sua razão podemos encontrar H(s).

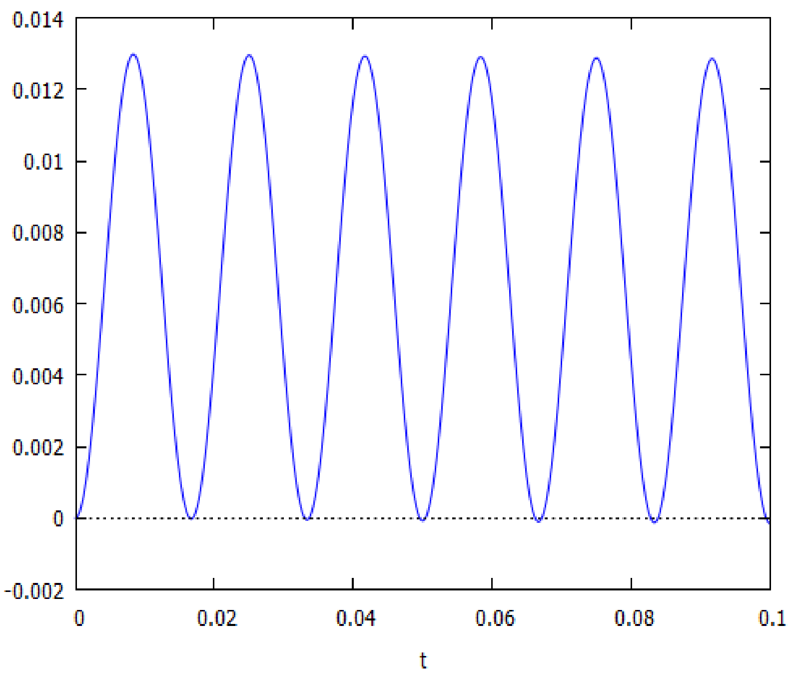
$$H(s) = \frac{12}{49s + 12}$$

II. $X(s) = \frac{120\pi}{s^2 + 14400\pi^2}$

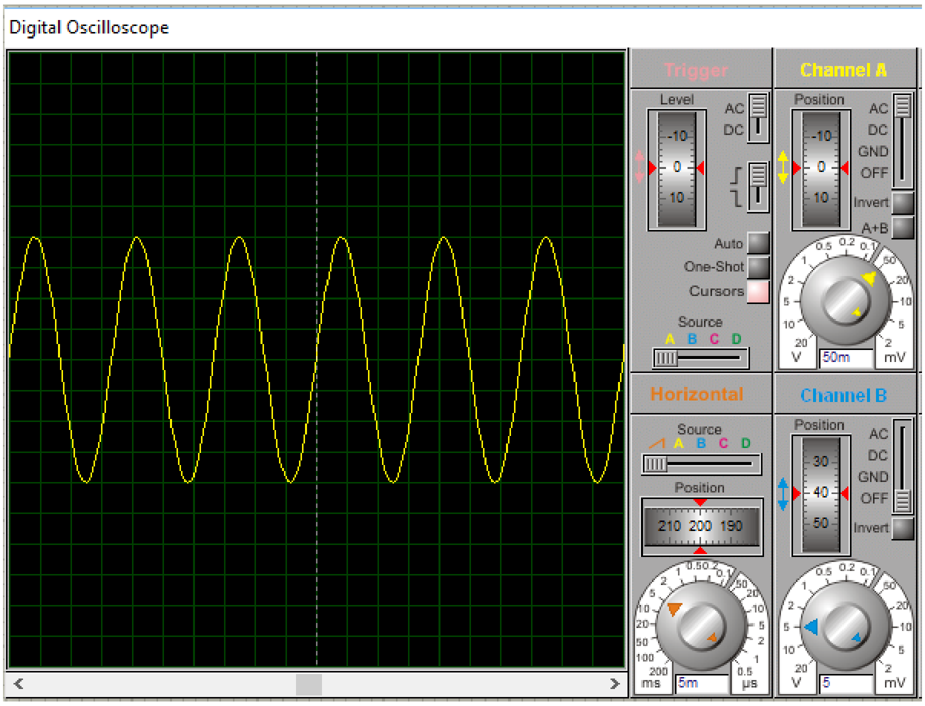
$$Y(s) = H(s) * X(s)$$

$$Y(s) = \frac{1440\pi}{(49s + 12)(s^2 + 14400\pi^2)}$$

$$\frac{\sin(120\,\pi\,t)}{240100\,\pi^2+1} - \frac{490\,\pi\cos(120\,\pi\,t)}{240100\,\pi^2+1} + \frac{490\,\pi\,\%e^{-\frac{12\,t}{49}}}{240100\,\pi^2+1}$$



III.


Digital Oscilloscope
Trigger
Level
AC
DC
Auto
One-Shot
Cursors
Source
A B C D
Channel A
Position
AC
DC
GND
OFF
Invert
A+B
50m
V
mV
Horizontal
Source
A B C D
Position
210 200 190
ms
5m
μs
Channel B
Position
AC
DC
GND
OFF
Invert
5
V
mV