```
syms m1 m2 m3 B1 B2 k1 k2
```

```
A = [0, 0, 0, -1 / m1, 0;
     0, -B1 / m2, B1 / m2, 1 / m2,-1 / m2;
     0, B1 / m3, -(B1 + B2) / m3, 0, -1 / m3;
     k1, -k1, 0, 0, 0;
     0, k2, -k2, 0, 0]
```

A =

$$
\begin{pmatrix}
0 & 0 & 0 & -\dfrac{1}{m_1} & 0 \\[2ex]
0 & -\dfrac{B_1}{m_2} & \dfrac{B_1}{m_2} & \dfrac{1}{m_2} & -\dfrac{1}{m_2} \\[2ex]
0 & \dfrac{B_1}{m_3} & -\dfrac{B_1+B_2}{m_3} & 0 & -\dfrac{1}{m_3} \\[2ex]
k_1 & -k_1 & 0 & 0 & 0 \\[2ex]
0 & k_2 & -k_2 & 0 & 0
\end{pmatrix}
$$

```
B = [1/ m1; 0; 0; 0; 0]
```

B =

$$
\begin{pmatrix}
\dfrac{1}{m_1} \\[1.5ex]
0 \\
0 \\
0 \\
0
\end{pmatrix}
$$

```
C = [0 0 1 0 0]
```

C = 1×5

    0   0   1   0   0

```
D = [0]
```

D = 0

```
syms s
```

```
H = C * inv(s * eye(5) -A) * B + D
```

H =

$$
-\frac{}{B_2\,k_1\,k_2 - k_1\,k_2\,m_1\,s - k_1\,k_2\,m_2\,s + k_1\,k_2\,m_3\,s + B_1\,B_2\,m_1\,s^3 + B_1\,k_1\,m_1\,s^2 + B_1\,k_1\,m_2\,s^2 + B_2\,k_1\,m_1\,s^2 + B_1\,k_1\,\ldots}
$$

```
simplify(H)
```

ans =

$$-\frac{}{B_2\,k_1\,k_2 - k_1\,k_2\,m_1\,s - k_1\,k_2\,m_2\,s + k_1\,k_2\,m_3\,s + B_1\,B_2\,m_1\,s^3 + B_1\,k_1\,m_1\,s^2 + B_1\,k_1\,m_2\,s^2 + B_2\,k_1\,m_1\,s^2 + B_1\,k_1\,\iota}$$