Exercise:

Find a state space realization of the second order transfer function defined below:

$$G(s) = \frac{9}{s^2 + 6s + 19}$$

Hint: use ‘tf2ss’
Exercise:

For the new system (in state space form), say sysSS, check if

1. The eigenvalues of the matrix $A$ and the poles of the transfer function $G(s)$ are the same
2. Use the $A$, $B$, $C$, $D$ matrices of the system sysSS to obtain the transfer function