Contents


```
clear
clc
```

Problem 4 Code

```
% Matrix of coeffcicients to solve for remainder polynomial
M       = [4 2 1; 4 -2 1; 4 1 0];
Minv    =  inv(M)

% Problem 4 A matrix
A       = [0 1 3; -2 1 1;2 1 1];
[T,J]   = jordan(A)

% Verify A = T*J*T^-1
A_check = T*J*inv(T)
```

```
Minv =

   -0.0625    0.0625    0.2500
    0.2500   -0.2500         0
    0.7500    0.2500   -1.0000


T =

   -0.2500    1.0000    0.7500
   -0.2500   -1.0000    0.2500
    0.2500    1.0000    0.7500


J =

    -2     0     0
     0     2     1
     0     0     2


A_check =

     0     1     3
    -2     1     1
     2     1     1
```

Problem 5 Code

```
% e^A from Laplace Inverse and Jordan Normal Form
eA_hand = [exp(1), 0; 3/2*(exp(1) - exp(-1)), exp(-1)]
```

```
% Problem 5 A Matrix
A       = [1 0; 3 -1];

% Matrix exponential
eA_mat  = expm(A)
```

```
eA_hand =

    2.7183         0
    3.5256    0.3679


eA_mat =

    2.7183         0
    3.5256    0.3679
```

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