

```
s = [34 -25.566 17.4603 -28.631 10.4935 -26.486]
```

```
s = 1×6  
34.000000000000000 -25.565999999999999 17.460300000000000 -28.631000000000000 ...
```

```
A = [s(3) s(2) s(1);  
      s(4) s(3) s(2);  
      s(5) s(4) s(3)]
```

```
A = 3×3  
17.460300000000000 -25.565999999999999 34.000000000000000  
-28.631000000000000 17.460300000000000 -25.565999999999999  
10.493499999999999 -28.631000000000000 17.460300000000000
```

```
B = [s(4);  
      s(5);  
      s(6)]
```

```
B = 3×1  
-28.631000000000000  
10.493499999999999  
-26.486000000000001
```

```
C = A\B
```

```
C = 3×1  
0.618454087637125  
0.821013024937908  
-0.542334556200234
```

```
rts = roots([1 -C(1) -C(2) -C(3)])'
```

```
rts = 1×3 complex  
-0.918428179395229 + 0.000000000000000i 0.768441133516177 - 0.001087123637977i ...
```

```
rho = sqrt(real(rts(2))^2 + imag(rts(2))^2 )
```

```
rho =  
0.768441902499747
```

```
theta = atan(abs(imag(rts(2))/real(rts(2))))
```

```
theta =  
0.001414712025815
```

```
syms n  
rs = [(rho^n) * cos(n*theta) (rho^n) * sin(n*theta) rts(1)^n];  
rs = vpa(rs, 20)
```

rs

= (0.76844190249974742013ⁿ cos(0.001414712025815442276 n) 0.76844190249974742013ⁿ sin(0.001414712025815442276 n)

```
rsNew = [subs(rs, 0); subs(rs, 1); subs(rs, 2)];  
rsNew = vpa(rsNew, 20)
```

rsNew =

$$\begin{pmatrix} 1.0 & 0 & 1.0 \\ 0.76844113351617706885 & 0.0010871236379767645128 & -0.91842817939522947146 \\ 0.59050059384182282467 & 0.0016707810412781900856 & 0.84351032070723580868 \end{pmatrix}$$

```
Sc = [s(1); s(2); s(3)]
```

Sc = 3×1

34.000000000000000
-25.565999999999999
17.460300000000000

```
B = vpa(rsNew \ Sc, 20)
```

B =

$$\begin{pmatrix} 6.9999850445460944995 \\ -5654.8323008474429718 \\ 27.0000149554539055 \end{pmatrix}$$

syms n

```
Sn = B(1)*(rho^n)*cos(n*theta) + B(2)*(rho^n)* sin(n*theta) + B(3)*(rts(1)^n);  
vpa(Sn, 20)
```

ans

= 6.9999850445460944995 0.76844190249974742013ⁿ cos(0.001414712025815442276 n) - 5654.8323008474429718 0.76844190249974742013ⁿ sin(0.001414712025815442276 n) + 27.0000149554539055

```
vpa(subs(Sn, [0 1 2 3 4 5]), 20)
```

ans

= (34.0 -25.566 17.460300000000000153 -28.630999999999953312 10.493499999999999493 -26.485999999999925)

s

s = 1×6

34.000000000000000 -25.565999999999999 17.460300000000000 -28.631000000000000 ...