

Chapter 3:

```
> A := <<0.4271,0.9924,0>|<0.8498,0,0.9826>|<0.1273,0,0>>;
```

$$A := \begin{bmatrix} 0.4271 & 0.8498 & 0.1273 \\ 0.9924 & 0 & 0 \\ 0 & 0.9826 & 0 \end{bmatrix}$$

(1)

```
> X := Matrix(3,11):
```

```
> X[1..3,1] := <30,30,30>;
```

$$X_{1..3,1} := \begin{bmatrix} 30 \\ 30 \\ 30 \end{bmatrix}$$

(2)

```
> for k from 2 to 11 do
```

```
    X[1..-1,k] := A.X[1..-1,k-1]
```

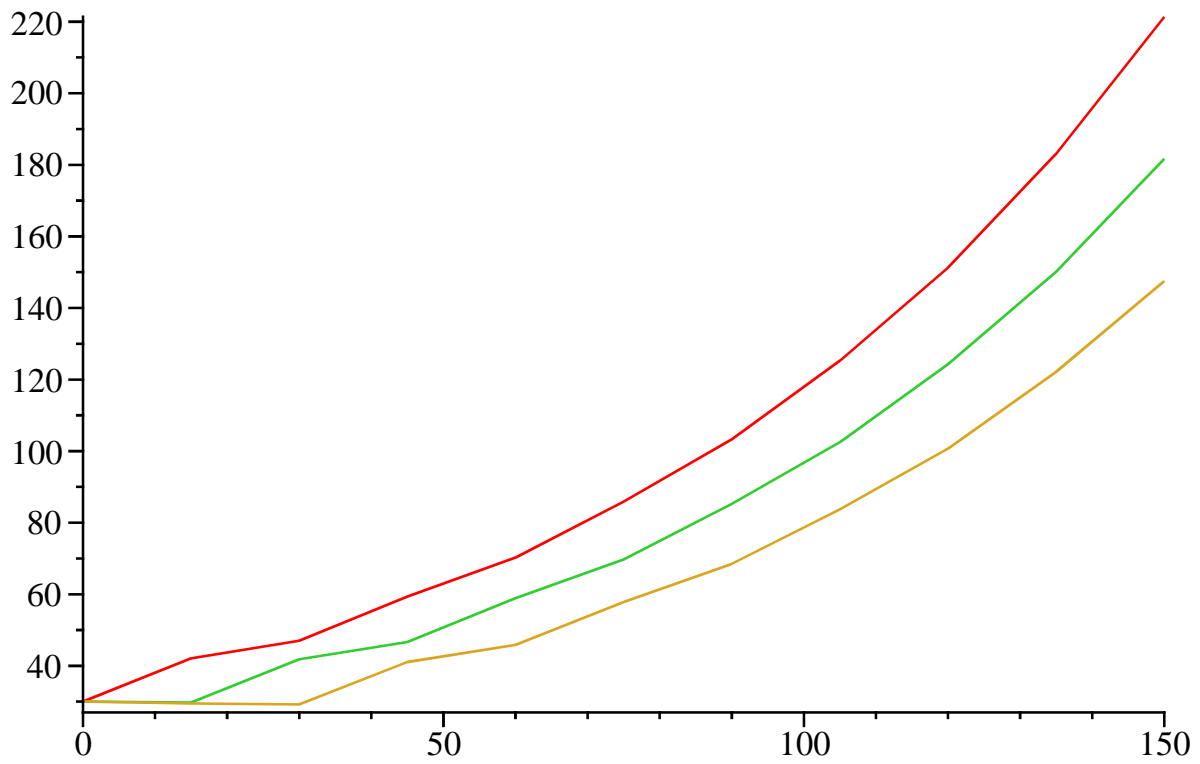
```
end do;
```

```
> LinearAlgebra:-Transpose(X[1..-1,2..11]);
```

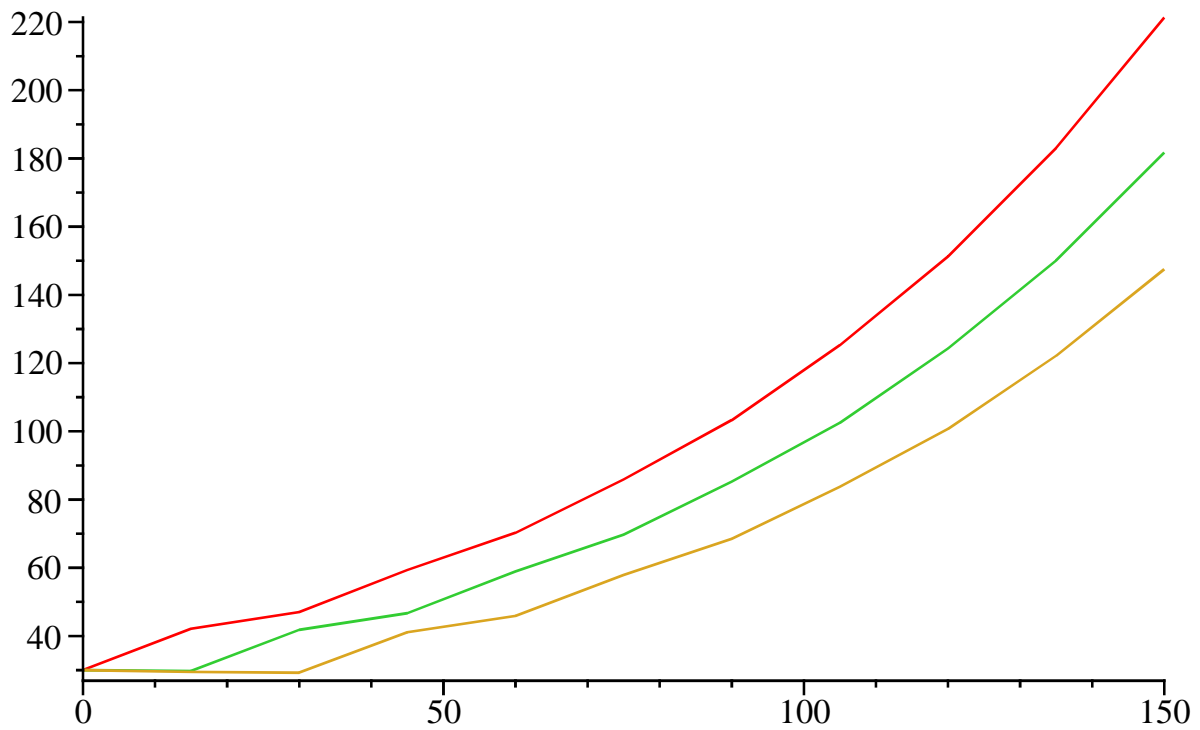
```
42.125999999999977 29.771999999999986 29.478000000000016
47.044809599999936 41.805842399999960 29.253967199999982
59.343473076239952 46.687269047039904 41.078420742239987
70.2497215475238335 58.8924626808605680 45.8749105656214980
85.8903469741463540 69.7158236637626488 57.8677338302135952
103.294836658709599 85.2375803371428305 68.5027683320131758
125.272522916104122 102.509795900103399 83.7544464392765492
151.278660125095854 124.320451741941724 100.726125451441604
183.081071399699027 150.128942308145128 122.157275881631946
221.324121988004919 181.689655257061304 147.516698711983394
```

(3)

```
> plot([
[seq([15*(j-1),X[1,j]],j=1..11)],
[seq([15*(j-1),X[2,j]],j=1..11)],
[seq([15*(j-1),X[3,j]],j=1..11)]
]);
```



```
> plot([seq([seq([15*(j-1),X[i,j]],j=1..11)],i=1..3)]);
```



```
> LinearAlgebra:-Eigenvalues(A);
```

$$\begin{bmatrix} 1.20933698819421176 + 0. I \\ -0.615455457319593946 + 0. I \\ -0.166781530874619082 + 0. I \end{bmatrix}$$

(4)

> **LinearAlgebra[Eigenvalues](A);**

$$\begin{bmatrix} 1.20933698819421176 + 0. I \\ -0.615455457319593946 + 0. I \\ -0.166781530874619082 + 0. I \end{bmatrix}$$

(5)