```
> with(LinearAlgebra):
```

This is Example 4 from class (Exercise 3 in the textbook) using TVs and VCRs.

The default size of an array shown to the screen will be 10 columns, so the next command changes that for our big matrix!

```
> interface(rtablesize=11);
```

$$11 \tag{1}$$

```
> A:=<<0,0,0,300,150,3>|<0,0,0,200,100,2>|<0,0,0,1,0,0>|<P1,0,0,-1,
  0,0>|<0,P2,0,0,1,0>|<0,0,0,0,-1,0>|<0,0,0,0,0,1>|<0,0,P3,0,0,
  -1>|<0,0,0,20000,11000,200>>;
```

$$A := \begin{bmatrix} 0 & 0 & 0 & P1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & P2 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & P3 & 0 \\ 300 & 200 & 1 & -1 & 0 & 0 & 0 & 0 & 20000 \\ 150 & 100 & 0 & 0 & 1 & -1 & 0 & 0 & 11000 \\ 3 & 2 & 0 & 0 & 0 & 0 & 1 & -1 & 200 \end{bmatrix} \tag{2}$$

```
> #Clear P2 to get a BFS
  A1:=RowOperation(A,[2,5],-P2);
```

$$A1 := \begin{bmatrix} 0 & 0 & 0 & P1 & 0 & 0 & 0 & 0 & 0 \\ -150\,P2 & -100\,P2 & 0 & 0 & 0 & P2 & 0 & 0 & -11000\,P2 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & P3 & 0 \\ 300 & 200 & 1 & -1 & 0 & 0 & 0 & 0 & 20000 \\ 150 & 100 & 0 & 0 & 1 & -1 & 0 & 0 & 11000 \\ 3 & 2 & 0 & 0 & 0 & 0 & 1 & -1 & 200 \end{bmatrix} \tag{3}$$

Pivot in Column 1, Row 4 (from ratio test below).

```
> evalf([(20000/300), 11000/150, 200/3]);
```

$$[66.66666667, 73.33333333, 66.66666667] \tag{4}$$

```
> A2:=RowOperation(A1,4,1/300):
  A3:=RowOperation(A2,[2,4],150*P2):
  A4:=RowOperation(A3,[5,4],-150):
  A5:=RowOperation(A4,[6,4],-3);
```

(5)

$$A5 := \begin{bmatrix} 0 & 0 & 0 & P1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{2} P2 & -\frac{1}{2} P2 & 0 & P2 & 0 & 0 & -1000\ P2 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & P3 & 0 \\ 1 & \frac{2}{3} & \frac{1}{300} & -\frac{1}{300} & 0 & 0 & 0 & 0 & \frac{200}{3} \\ 0 & 0 & -\frac{1}{2} & \frac{1}{2} & 1 & -1 & 0 & 0 & 1000 \\ 0 & 0 & -\frac{1}{100} & \frac{1}{100} & 0 & 0 & 1 & -1 & 0 \end{bmatrix} \quad \textbf{(5)}$$

Therefore, this tableau is "optimal" with basic variables x1, s2m, s3p.

x_1= 66.66, x_2=0, s_1=0, s_2^-=1000 (we did not meet our profit goal), and s_3=0