

```
> restart:
> with(linalg):
Warning, the protected names norm and trace have been redefined and
unprotected
```

```
> r = p / (1 - e*cos(w));
> r*e*cos(w) + p = r;
```

$$r = \frac{p}{1 - e \cos(w)}$$

$$r e \cos(w) + p = r$$

```
> A:=matrix([[1.807,1],[0.781,1],[0.196,1],[-0.371,1],[-0.600,1
]]): B:=transpose(A): X:=matrix([[e],[p]]):
Y:=matrix([[2.70],[2.00],[1.61],[1.20],[1.02]]):
> evalm(A) * evalm(X) = evalm(Y);
```

$$\begin{bmatrix} 1.807 & 1 \\ .781 & 1 \\ .196 & 1 \\ -.371 & 1 \\ -.600 & 1 \end{bmatrix} \begin{bmatrix} e \\ p \end{bmatrix} = \begin{bmatrix} 2.70 \\ 2.00 \\ 1.61 \\ 1.20 \\ 1.02 \end{bmatrix}$$

```
> evalm(B)*evalm(A)*evalm(X) = evalm(B)*evalm(Y);
```

$$\begin{bmatrix} 1.807 & .781 & .196 & -.371 & -.600 \\ 1 & 1 & 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} 1.807 & 1 \\ .781 & 1 \\ .196 & 1 \\ -.371 & 1 \\ -.600 & 1 \end{bmatrix} \begin{bmatrix} e \\ p \end{bmatrix} =$$

$$\begin{bmatrix} 1.807 & .781 & .196 & -.371 & -.600 \\ 1 & 1 & 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} 2.70 \\ 2.00 \\ 1.61 \\ 1.20 \\ 1.02 \end{bmatrix}$$

```
> evalm(B&*A)*evalm(X) = evalm(B&*Y);
```

$$\begin{bmatrix} 4.411267 & 1.813 \\ 1.813 & 5 \end{bmatrix} \begin{bmatrix} e \\ p \end{bmatrix} = \begin{bmatrix} 5.69926 \\ 8.53 \end{bmatrix}$$

```
> solve({4.411267*e + 1.813*p = 5.69926, 1.813*e + 5*p =
8.53},{e,p});
```

$$\{e = .6942914321, p = 1.454249927\}$$

```
[ > r = 1.454 / (1 - 0.694*cos(w));
```

$$r = 1.454 \frac{1}{1 - .694 \cos(w)}$$

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[ >
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