(%i1) `load(vector);`

(%o1) /usr/share/maxima/5.34.1/share/vector/vector.mac

(%i2) `load(eigen);`

(%o2) /usr/share/maxima/5.34.1/share/matrix/eigen.mac

(%i3) `X: entermatrix(6, 4);`

$Row1Column1 : cos(0); Row1Column2 : sqrt(1/2)*cos(atan(1)*1); Row1Column3 : sqrt(1/4)*cos(atan(1)*2); Row1Column4 : sqrt(1/8)*cos(atan(1)*3); Row2Column1 : sin(0); Row2Column2 : sqrt(1/2)*sin(atan(1)*1); Row2Column3 : sqrt(1/4)*sin(atan(1)*2); Row2Column4 : sqrt(1/8)*sin(atan(1)*3); Row3Column1 : cos(0); Row3Column2 : (1/2)*cos(atan(2)*1); Row3Column3 : (1/4)*cos(atan(2)*2); Row3Column4 : (1/8)*cos(atan(2)*2); Row4Column1 : sin(0); Row4Column2 : (1/2)*sin(atan(2)*1); Row4Column3 : (1/4)*sin(atan(2)*2); Row4Column4 : (1/8)*sin(atan(2)*3); Row5Column1 : cos(0); Row5Column2 : ((1/4)*cos(atan(4)))^1; Row5Column3 : ((1/4)*cos(atan(4)))^2; Row5Column4 : ((1/4)*cos(atan(4)))^3; Row6Column1 : 0; Row6Column2 : 0; Row6Column3 : 0; Row6Column4 : 0; Matrixentered.$

(%o3)
$$\begin{pmatrix} 1 & \frac{1}{2} & 0 & -\frac{1}{4} \\ 0 & \frac{1}{2} & \frac{1}{2} & \frac{1}{4} \\ 1 & \frac{1}{2\sqrt{5}} & \frac{\cos(2\,\mathrm{atan}(2))}{4} & \frac{\cos(2\,\mathrm{atan}(2))}{8} \\ 0 & \frac{1}{\sqrt{5}} & \frac{\sin(2\,\mathrm{atan}(2))}{4} & \frac{\sin(3\,\mathrm{atan}(2))}{8} \\ 1 & \frac{1}{4\sqrt{17}} & \frac{1}{272} & \frac{1}{64\,17^{\frac{3}{2}}} \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

(%i4) `numer: true;`

(%o4) *true*

(%i5) `XTXi: expand(invert(transpose(X).X));`

(%o5)
$$\begin{pmatrix} 1.116055148539248 & -3.245558506798167 & 4.885933195273312 & -2.808266608016274 \\ -3.245558506798167 & 16.99242981430889 & -28.1783431042316 & 23.74747068620923 \\ 4.885933195273311 & -28.1783431042316 & 52.77708300967114 & -46.68843333648464 \\ -2.808266608016274 & 23.74747068620923 & -46.68843333648465 & 52.43765843789956 \end{pmatrix}$$

(%i6) `XT: expand(transpose(X));`

(%o6)
$$\begin{pmatrix} 1 & 0 & 1 & 0 & 1 & 0 \\ 0.5 & 0.5 & 0.2236067977499789 & 0.4472135954999579 & 0.06063390625908324 & 0 \\ 0 & 0.5 & -0.1499999999999999 & 0.2 & 0.003676470588235294 & 0 \\ -0.25 & 0.25 & -0.07499999999999998 & -0.02236067977499786 & 2.2291877301133541\,10^{-4} & 0 \end{pmatrix}$$

(%i7) `Ideal: [0, 1, 0, 1, 0, 1];`

(%o7) $[0, 1, 0, 1, 0, 1]$

(%i8) `Multipliers: expand(XTXi.XT.Ideal);`

(%o8)
$$\begin{pmatrix} -0.2933558075978454 \\ 1.776478451801921 \\ -0.375074807308545 \\ 1.748896678169138 \end{pmatrix}$$

(%i9) `Results: expand(X.Multipliers);`

(%o9)
$$\begin{pmatrix} 0.1576592487608304 \\ 1.137925991788972 \\ 0.02897082051501887 \\ 0.6803438357167292 \\ -0.1866300692758432 \\ 0.0 \end{pmatrix}$$