#NGroups 1

Title
Calculation

Begin Matrices;
End Matrices;

Begin Algebra;
End Algebra;

End Group;
TITLE: Figuring out the likelihood by hand

Calculation

!Declare matrices here
Begin Matrices; ! After MATRIX letter, specify type of matrix i.e. FULL or SYMMETRIC and DIMENSIONS.
E ! Expected Covariance Matrix
H !
T !
M ! Mean vector
P ! Pi
X ! Observed Data
End Matrices;

! Declare matrix values here
Matrix E
!Place values for MATRIX E here
Matrix H
!Place values for MATRIX H here

!Input other matrices and values here

Begin Algebra;
O= ! Fractional part: 2*pi*sqrt(det(e))
Q= ! Mahalanobis distance: (indiv score - mean)’ & inverse of covariance matrix
R= !
S=-T*ln(R%O); ! minus twice log-likelihood
Z=-T*ln(npfnor(X’_M’_E)); ! an easier way
End Algebra;

End Group;
#NGroups 1

TITLE: Figuring out the likelihood by hand

Calculation

!Declare matrices here

Begin Matrices;
  ! After MATRIX letter, specify type of matrix i.e. FULL or SYMMETRIC and DIMENSIONS.
  E symm 2 2 ! Expected Covariance Matrix
  H Full 1 1 !
  T Full 1 1 !
  M Full 2 1 ! Mean vector
  P Full 1 1 ! Pi
  X Full 2 1 ! Observed Data
End Matrices;

! Declare matrix values here

Matrix E
  !Place values for MATRIX E here
  E = \begin{bmatrix} 1 & 0.5 \\ 0.5 & 1 \end{bmatrix}

Matrix H
  !Place values for MATRIX H here
  H = \begin{bmatrix} 0.5 \\ 2 \end{bmatrix}

Matrix P
  !Place values for MATRIX P here
  P = 3.141592

End Matrices;

! Declare matrix values here

Begin Algebra;
  O= \text{Fractional part: } 2\pi \sqrt{\text{det}(e)} \quad (5.4414)
  Q= \text{Mahalanobis distance: } (\text{indiv score - mean})' \& \text{ inverse of covariance matrix} \quad (0.6533)
  R= e^{-0.5 \times \text{Mahalanobis distance}} \quad (0.7213)
  S=-T\ln(R\%O); \quad \text{minus twice log-likelihood} \quad (4.0414)
  Z=-T\ln(\text{pdfnor}(X'_M'E)); \quad \text{an easier way} \quad (4.0414)
End Algebra;

End Group;
TITLE: Figuring out the likelihood by hand
Calculation

! Declare matrices here
begin Matrices;
ep 2 2 ! Expected Covariance Matrix
H Full 1 1 !
T Full 1 1 !
M Full 2 1 ! Mean vector
P Full 1 1 ! Pi
X Full 2 1 ! Observed Data
end Matrices;

! Declare matrix values here
Matrix E
1 0.5
0.5 1
Matrix H
0.5
Matrix M
0
0
Matrix P
3.141592
Matrix T
2
Matrix X
0.5
-0.3

begin Algebra;
O= ! Fractional part: 2*pi*sqrt(det(e)) (5.4414)
Q= ! Mahalanobis distance: (indiv score - mean)' & inverse of covariance matrix (0.6533)
R= ! e to the power -.5 × Mahalanobis distance (0.7213)
S=-T*ln(R); ! minus twice log-likelihood (4.0414)
Z=-T*ln(pdfnor(X'_M'_E)); ! an easier way (4.0414)
end Algebra;

end Group;
TITLE: Figuring out the likelihood by hand
Calculation

! Declare matrices here
Begin Matrices; ! After MATRIX letter, specify type of matrix i.e. FULL or SYMMETRIC and DIMENSIONS.
E symm 2 2 ! Expected Covariance Matrix
H Full 1 1 !
T Full 1 1 !
M Full 2 1 ! Mean vector
P Full 1 1 ! Pi
X Full 2 1 ! Observed Data
End Matrices;

! Declare matrix values here
Matrix E
  1
  0 5 1
Matrix H
  0 5
Matrix M
  0
  0
Matrix P
  3.141592
Matrix T
  2
Matrix X
  0 5
  -0.3

Begin Algebra;
O=T*P*sqrt(det(E)); ! Fractional part, 2pi*sqrt(det(e))
Q=(X-M)'&(E~); ! Mahalanobis Distance, (indiv score - mean)'& inverse of covariance matrix
R=exp(-H*Q); ! e to the power -.5xMahalanobis distance
S=-T*ln(R%O); ! minus twice log-likelihood
Z=-T*ln(pdfnor(X'_M'_E)); ! an easier way
End Algebra;

End Group;