Mathematica practice
9/12/2017

\[ a = \{1, 2, 3\} \] assign a vector
\[ a \cdot b \] take dot product of two vectors
\[ \text{Cross}[a, b] \] take cross product of two vectors
\[ \text{Norm}[a] \] compute the length of a vector

**Practice**
\[ a = \{1, 2, 3\}, \ b = \{1, -1, 0\}, \ c = \{0, 1, 2\}. \] Compute \( \|a + 2b - c\|, \ (a \times b) \times c \) and \( a \cdot (b \times c) \).

\[ A = \{\{1, 2, 3\}, \{4, 5, 6\}, \{7, 8, 9\}\} \] assign a matrix
\[ \text{MatrixForm}[A] \] show matrix in planar form
\[ \text{Det}[A] \] compute the determinant of a matrix
\[ A[i,j] \] the entry at the \( i \)’th row and \( j \)’th column
\[ A[i] \] the \( i \)’th row
\[ A[[\text{All},j]] \] the \( j \)’th column

**Practice**
Execute the above commands.

**Practice**
Write the parametrization of a line passing through point \( A(1, 0, -1) \) with direction vector \( a = \langle 2, 1, 1 \rangle \).
Some plotting commands

Plot \hspace{1cm} \text{plot function } y = f(x)

Plot3D

ContourPlot

ContourPlot3D

ParametricPlot

ParametricPlot3D

Some options

Axes→True/False \hspace{1cm} \text{Show/Hide axes}

AxesLabel→{\ldots}

Mesh→True/False \hspace{1cm} \text{Show/Hide mesh}

ViewPoint→{\ldots}