You only need to submit questions 2 to 4 in CMS.

1 Different ways to create vectors

Type the following expressions in the MATLAB Command Window to see what kind of vectors they create. Write the resulting vectors (and answer the questions) on the blanks.

\[
\begin{align*}
a &= \text{zeros}(1,4) \quad \%________________ \\
b &= \text{zeros}(4,1) \quad \%________________ \text{ What do the arguments specify?________________________} \\
c &= \text{ones}(1,3) \quad \%________________ \\
d &= 10:2:17 \quad \%________________ \\
f &= 10:-1:17 \quad \%________________ \\
g &= [10 \, 20 \, 40] \quad \%________________ \text{ What does the space separator do?____________________} \\
h &= [10,20,40] \quad \%________________ \text{ What does the comma separator do?____________________} \\
k &= [10;20;40] \quad \%________________ \text{ What does the semi-colon separator do?________________} \\
m &= [a \, g] \quad \%________________ \\
n &= [b; \, k] \quad \%________________ \\
p &= [a \, k] \quad \%ERROR--mismatched dimensions! (Attempt to concatenate a column to a row) \\
q &= b' \quad \%________________ \text{ This operation is called "transpose"} \\
r &= [a \, b'] \quad \%________________ \\
\end{align*}
\]

2 Evaluate a polynomial

Write a function \texttt{evalPoly} to evaluate an \(n\)th order polynomial of \(x\):

\[
a_0 + a_1x + a_2x^2 + \cdots + a_nx^n
\]

The two input parameters are \texttt{coef} and \texttt{x}. \texttt{coef} is a vector or real values of length \(n + 1\) and contains the coefficients of the polynomial. \texttt{coef(1)} corresponds to \(a_0\), \texttt{coef(2)} corresponds to \(a_1\), etc. Input parameter \texttt{x} is a real value. Function \texttt{evalPoly} returns the value of the polynomial evaluated at \texttt{x}.

3 Minimum value in a vector

Implement the following function:

\[
\begin{align*}
\text{function } [\text{val}, \text{k}] &= \text{findMin(v)} \\
\% \text{ Find the minimum value in vector v. v is a vector of real numbers. length(v)>0.} \\
\% \text{ val is the minimum value in v.} \\
\% \text{ k is the first position at which the minimum value appears.} \\
\end{align*}
\]

Do not use the built-in functions \texttt{min} or \texttt{max}.


4 Biggest rectangle

Implement the following function:

```matlab
function [a,b,c,d] = biggestRectangle(x,y,v,w)

% Find the rectangle with the largest area. Rectangles have sides parallel to the axes.
% x,y,v,w are vectors of the same length containing real numbers. length(x)>0.
% The points (x(1),y(1)) and (v(1),w(1)) are the opposing corners of rectangle 1,
% the points (x(2),y(2)) and (v(2),w(2)) are the opposing corners of rectangle 2,...
% the points (x(k),y(k)) and (v(k),w(k)) are the opposing corners of rectangle k.
% (a,b) and (c,d) are the opposing corners of the biggest rectangle in the set of
% rectangles defined by x,y,v,w.
```