

MATLAB EXERCISE 1.17 **Dot product of two vectors.** Write a function `dotProduct()` in MATLAB that computes the dot product of two vectors in the Cartesian coordinate system,

$$\mathbf{a} \cdot \mathbf{b} = (a_x \hat{\mathbf{x}} + a_y \hat{\mathbf{y}} + a_z \hat{\mathbf{z}}) \cdot (b_x \hat{\mathbf{x}} + b_y \hat{\mathbf{y}} + b_z \hat{\mathbf{z}}) = a_x b_x + a_y b_y + a_z b_z . \quad (\text{S1.7})$$

Test the function for vectors $\mathbf{a} = \hat{\mathbf{x}} + 2\hat{\mathbf{y}} + 3\hat{\mathbf{z}}$ and $\mathbf{b} = \hat{\mathbf{x}} + \hat{\mathbf{y}} + \hat{\mathbf{z}}$ ($\mathbf{a} \cdot \mathbf{b} = 6$). (*[dotProduct.m on IR](#)*)

SOLUTION:

```
%  
% Book: MATLAB-Based Electromagnetics (Pearson Prentice Hall)  
% Author: Branislav M. Notaros  
% Instructor Resources  
% (c) 2011  
%  
% This MATLAB code or any part of it may be used only for  
% educational purposes associated with the book  
%  
%  
%
```

```
% Dot product of two vectors
```

```
function [result] = dotProduct(A,B)  
if (length(A)==length(B))  
    result = 0;  
    for i=1:length(A)  
        result = result + A(i)*B(i);  
    end  
else disp ('Error - vector dimensions are not valid');  
    result = 0;  
end;
```