

Exercise 6

```
%Prints the function 'polint' into Live Script.  
type polint
```

```
%Creates the function 'polint'. Accepts as an input a polynomial P.  
function I = polint(P)  
% Command 'sym2poly' - Returns numeric coefficients c of input 'P'  
c = sym2poly(P);  
  
% Gathers coefficients  
c = c(end:-1:1);  
A = [];  
  
%'For loop' for integration calculations on 'c' coefficients  
for i = 1:length(c)  
    A(i) = c(i)/i;  
end  
A = A(end:-1:1);  
  
% Sets arbitrary constant to '3'  
A = [A 3];  
  
% Output 'I' is polynomial written in a symbolic form through the  
% standard basis.  
I = poly2sym(A);  
end
```

```
format  
syms x
```

Part A

```
%Given polynomial assigned to 'P'  
P = 6*x^5+5*x^4+4*x^3+3*x^2+2*x+6
```

$$P = 6x^5 + 5x^4 + 4x^3 + 3x^2 + 2x + 6$$

```
% The output I is polynomial integrated written in a symbolic form through the standard basis  
I = polint(P)
```

$$I = x^6 + x^5 + x^4 + x^3 + x^2 + 6x + 3$$

```
%Logical command to make sure that output matches the output of a MATLAB built-in function  
isequal(I,int(P)+3)
```

```
ans = logical  
1
```

Part B

```
%Given polynomial assigned to 'P'  
P = x^5-2*x^3+3*x+5
```

$$P = x^5 - 2x^3 + 3x + 5$$

```
% The output I is polynomial integrated written in a symbolic form through the standard basis  
I = polint(P)
```

I =

$$\frac{x^6}{6} - \frac{x^4}{2} + \frac{3x^2}{2} + 5x + 3$$

```
%Logical command to make sure that output matches the output of a MATLAB built-in function  
isequal(I,int(P)+3)
```

```
ans = logical  
     1
```