Tutorial   : 4   Working with Polynomials

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Aim

    To understand polynomial function using SCILAB.

Theory

1. SCILAB has support to solve polynomials. You can create polynomials, find roots of add, subtract, multiply divide and simplify polynomials.

2. The polynomial for roots 6,2 with variable x is given as follows

   ```
   -->p1=poly([6,2],'x','r')
    p1  =
                   2
       12 - 8x + x
   ```

3. The roots of the given polynomial can be find out as follows
   ```
   -->p1=poly([6,-5,1],'x','c')
    p1  =
                  2
       6 - 5x + x
   -->roots(p1)
    ans  =

       3.
       2.
   ```

4. The symbolic representation of polynomial is given as follows

   ```
   -->p1=poly([6,-5,1],'x','c')
    p1  =
                  2
       6 - 5x + x
   ```

5. The addition of two polynomials in SCILAB is given as follows

   ```
   -->p1=poly([6,-5,1],'x','c')
    p1  =
                 2
      6 - 5x + x
   ```

```
-->p2=poly([6,2],'x','r')
 p2  =

                  2
    12 - 8x + x

-->p3=p1+p2
 p3  =

                  2
    18 - 13x + 2x
```

6. The subtraction of two polynomials in SCILAB is given as follows

```
-->p4=p1-p2
 p4  =

   - 6 + 3x
```

7. The multiplication of two polynomials in SCILAB is given as follows

```
-->p5=p1*p2
 p5  =
                   2      3    4
    72 - 108x + 58x - 13x + x
```

8. The coefficient of polynomial in SCILAB is given as follows

```
-->coeff(p2)
 ans  =

    12.  - 8.    1.
```

9. The derivative of polynomial in SCILAB is given as follows

```
->derivat(p2)
 ans  =

  - 8 + 2x
```

RESULT

Thus we learnt the operations involved in polynomial functions using SCILAB