**ASSIGNMENT: -05**

**EECE: -212**

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**Level: 2**

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**Here are some mathematical problem are solved by MATLAB 2020a.according to the questions. The answers are given bellow:**

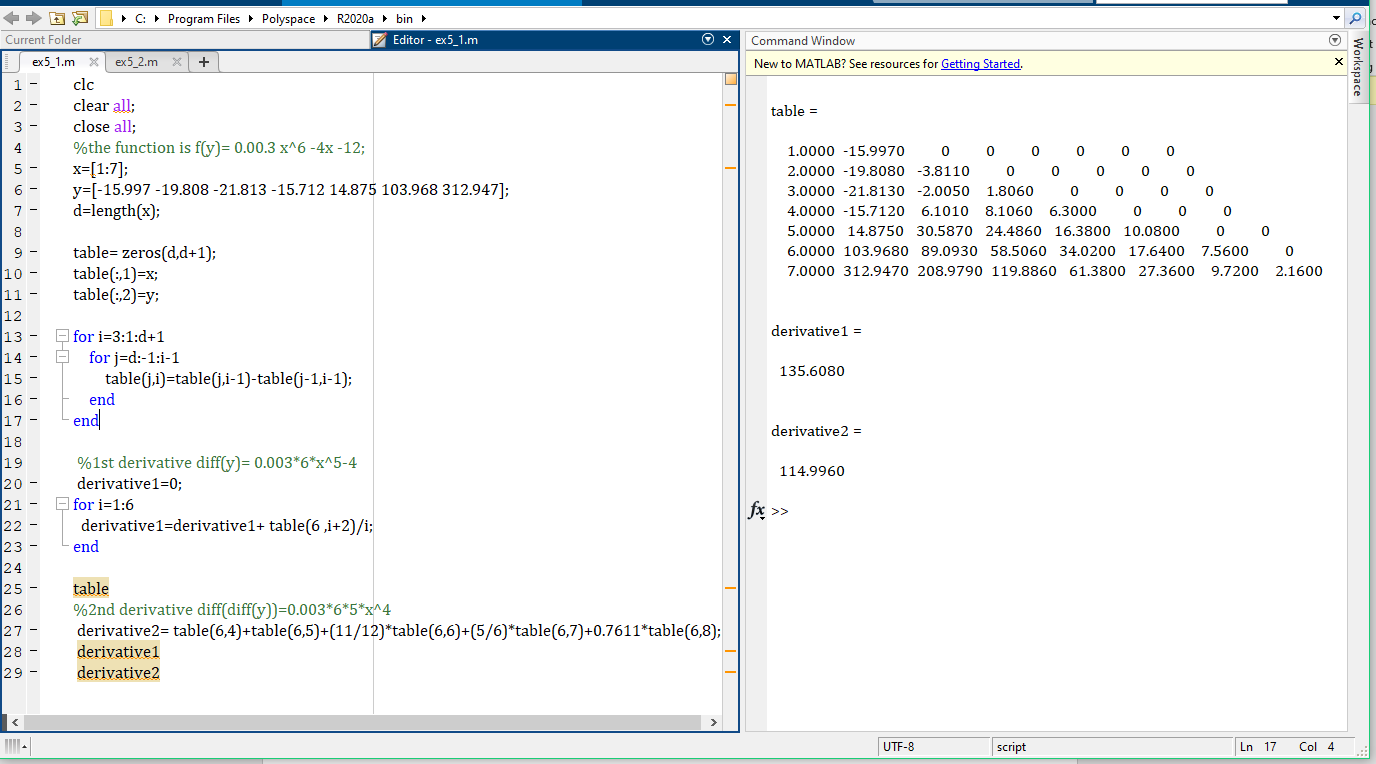
**Question:**

**(x, y) = (1, -15.997), (2, -19.808), (3, -21.813), (4, -15.712), (5,14.875), (6,103.968), (7, 312.947) Find the first and second derivative of the interpolated curve at x = 6 and x = 7. Use backward difference method.**

**Solution:**

Here given some value of a function=(0.00.3 x^6 -4x -12) against the value of x. Now I have to find the 1st derivative and 2nd derivative of the interpolated curve at x=6 & x=7.The programs are given bellow.

**When x=6:**



**Here,**

1st derivative is 135.6080

2nd derivative is 114.9960

Here point to be noted that in backward function, in the decreasing of the value of x the accuracy of the value is also decreased.

So, when x=6

The value of 1st derivate is 135.6080.

But,

The accurate value is:

diff(.003\*x^6-4\*x-12);

= 0.003\*6\*x^5-4

=135.968.

**The accuracy is**:

Again, the value of 2nd derivative is 114.9960.

But,

The accurate value is:

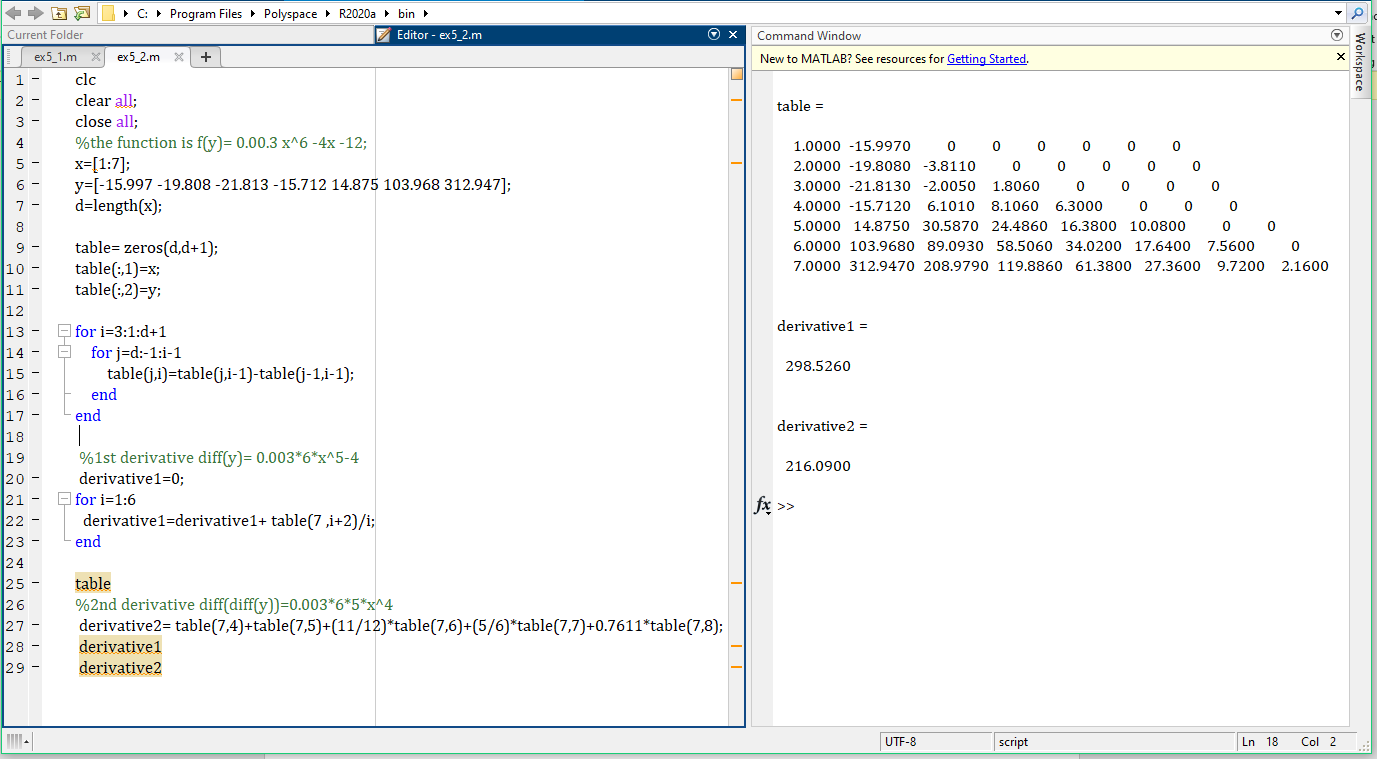
diff (diff (0.00.3 x^6 -4x -12))

=0.003\*6\*5\*x^4

=116.64

**The accuracy is**:

**When x=7:**



**Here,**

1st derivative is 298.5260

2nd derivative is 216.0900

As x=7 is the last value of backward function so it is fully accurate is the program value.