

VIII Exercise Lesson

Monday, November 24th 2014

Ex. 1 Calculate the Taylor polynomial of the following functions around the specified points:

1.

$$f(x) = e^x x^2 \quad \text{at } x = 1$$

2.

$$f(x) = (x + 3)e^{-x} \quad \text{at } x = 0$$

3.

$$f(x) = x \sin(2 - x) \quad \text{at } x = 2$$

4.

$$f(x) = \frac{\cos(\pi x)}{x + 2} \quad \text{at } x = 1$$

5.

$$f(x) = \frac{x + 3}{x^2 + 1} \quad \text{at } x = 0$$

Ex. 2 Calculate the order of the following functions around the specified points:

1.

$$f(x) = (e^x - 1)x^2 \quad \text{at } x = 0$$

2.

$$f(x) = xe^{-x} + 3e^{-x} \quad \text{at } x = -3$$

3.

$$f(x) = (x^2 - 4) \sin(2 - x) \quad \text{at } x = 2$$

4.

$$f(x) = \frac{x^2 - 5x - 6}{x^2 + 1} \quad \text{at } x = -1$$

5.

$$f(x) = e^{x-1}(x^2 - 5x - 6) \quad \text{at } x = 1$$