

MATHEMATICS
Monday November 30 2015
Ninth Exercise Class

1) Calculate the Taylor polynomial of the following functions around the specified points and stopping at the specified order:

$$y = f(x) = (1 + e^x)(x + 2) \quad (x_0 = 1, n = 3)$$

$$y = f(x) = \log(1 - \sin^2 x) \quad (x_0 = 0, n = 4)$$

2) Calculate the order of the following functions around the specified points:

$$y = f(x) = 2 + x + 3x^2 - x^3 - 5e^{x-1} \quad \text{at } x = 1$$

$$y = f(x) = \sqrt{\cos x} - 1 \quad \text{at } x = 0$$

3) Compute the following limits using Taylor expansion

$$\lim_{x \rightarrow 0} \frac{e^x - \sin x - \cos x}{e^{x^2} - e^{x^3}}$$