Name and ID: CSE 417, Quiz 1

Marks obtained: Fall 2018, NSU

Question 1: 6 Points

(a) Convert $(3.125)_{10}$ to binary representation.

(b) Use IEEE 754 standard to represent the binary form of 3.125 to a 32-bit register.

Question 2: 6 Pts

Given $f(x) = x^{1/3}$ and $a = 4$, using Taylor's expansion find a polynomial of degree 2 for $f(x)$ at a.

Bonus Question: 4 Points

Explain if the below sequence converges or diverges:

(a) $\sum_{n=1}^{\infty} \frac{n^3}{n^5+3}$

(b) Given a function $f(x) = 4x^3 - 6x + 1 = 0$ identify if root for $f(x)$ exists within the intervals [0 1] and [0 2]. What theorem guarantees the existence of a root within a given interval?

Question 3: 8 Points

Find the equation of the tangent line to $M(x) = (x \cos x)/(x+1)$ at the given point $x = \pi$