

Note : See Q2 on the other side of the paper

Q1. For $f(x) = \frac{1+x^2}{1-x^2}$ find: a) Find the vertical & Horizontal Asymptotes

b) Intervals of increase & decrease

c) Local maximum and minimum values

d) Intervals of concavity and inflection points

(e) Sketch the Graph of f using (a-d)

Q2. A box with a square base and open top must have a volume of 32000 cm^3 . Find the dimensions of the box that minimize the amount of material used.

Q2. By using the Newton's method **approximate** the point of intersection of the curves $y = x + 1$ and $y = 5 - (x - 1)^2$ with the initial approximation $x_1 = 4$.

(Only find the next approximation x_2)

Q3. Find the antiderivative of $f(x) = \sin 4x - (1/\sqrt[3]{x})$ that satisfies $f(\pi/4) = 0$.