

Math 2513 – Summer 2024

Assignment 2

Due: June 5, 2024 – 11:59PM

Q1 – Approximate the value of $0.9^4/5.01^3$ without using a computer or calculator.

Q2 – Find an approximate value for $\sin(91.1^\circ)$ without using a computer or calculator.

Q3 – Find the gradient of the function $f(x,y) = e^{xy}\sin(x+y)$

Q4 – Find the directional derivative of the function $f(x,y,z) = \sin(xy)\cos(z)$ in the z direction at the point $(1,1,0)$.

Q5 – Find all of the maxima and minima for the curve $f(x,y)$, $x^3y = 3$.

Q6 – Use the method of Lagrange Multipliers to find the maximum and minimum values of $f(x,y)=xy$ subject to the constraint $x+2y^2=1$.

Q7 – Use the Second Derivative test to find all of the values of the constant c for which the function $z = x^2 + cxy = y^2$ has a saddle point at $(0,0)$.