



Department of Mathematics and Natural Sciences

MAT 110

ASSIGNMENT

SUMMER 2022

SET: 2

1. Determine the 1st and 2nd degree Taylor polynomials $L(x,y)$ and $Q(x,y)$ for $f(x,y) = x^2y + y^2$ for (x,y) near the point $(1,3)$.
2. Determine the 1st and 2nd degree Taylor polynomials $L(x,y)$ and $Q(x,y)$ for $f(x,y) = \ln(x^2 + y^2 + 1)$ for (x,y) near the point $(0,0)$.
3. Locate all relative maxima, relative minima and saddle points (if any) for $f(x,y) = x^2 + y^2 + \frac{2}{xy}$
4. Locate all relative maxima, relative minima and saddle points (if any) for $f(x,y) = xy + \frac{2}{x} + \frac{4}{y}$.
5. Compute the Divergence and Curl of the following vector \vec{F}
 $\vec{F} = yze^{xy}\vec{i} + xze^{xy}\vec{j} + (e^{xy} + 3\cos 3z)\vec{k}$
6. Compute the Divergence and Curl of the following vector
 $\vec{F} = (xyz)\vec{i} + y\sin z\vec{j} + (y\cos x)\vec{k}$