

1. Consider the power series $\sum_{n=1}^{\infty} \frac{x^n}{\sqrt{n^2+3}}$.
 - (a) Find the radius of convergence of the power series.
 - (b) Find the interval of convergence of the power series.

2. Find the point $p(x,y,z)$ on the plane $2x+y-z-5=0$ that is closest to the origin.

3. Let $\vec{F} = (x^2 - y)\vec{i} + (4z)\vec{j} + (x^2)\vec{k}$ and let C be the curve of intersection of the plane $z = 2$ and the cone $z = \sqrt{x^2 + y^2}$.
 - (a) Find a parametric equations $\vec{r}(r, \theta)$ of the curve C .
 - (b) By using Stoke's theorem, find the circulation of the field \vec{F} counterclockwise around the circle C .