

Instructions This practice exam is to be completed in groups of two or three people.

Problems

1. Find the area and the interior angles of the parallelogram whose sides are formed by the vectors $v = (1, 2, 1)$ and $w = (1, 4, -3)$.
2. Write parametric equations for the intersection of the planes $x - 2y + z = 4$ and $2x - y + z = 2$.
3. Find the equation of the plane which is perpendicular to the line from problem 2, and passes through $(1, 1, 1)$.
4. Parameterize the curve $R(t) = (\sqrt{1 - t^2}, 1, t)$ for $t \in [-1, 1]$ by arclength.
5. Find the curvature of $R(t)$ from problem 4.
6. Evaluate

$$\lim_{(x,y) \rightarrow (0,0)} \frac{x^2 y}{x^4 + y^2}$$

7. Calculate f_{xy} , for $f = \cos\left(\arctan\left(\frac{\sqrt{1-(xy)^2}}{xy}\right)\right)$.

Solutions