1. V = 4I + 7J, W = -I + 5J are two vectors in the plane.
   a) Find the angle between V and W.
   b) Find the angle between V and W⁺.
   c) Find the area of the parallelogram spanned by W and W⁺.

2. Find the distance of the point (2,-2) from the line given by the equation x + 2y = 8.

3. A particle moves in the plane according to the equation
   \[ \mathbf{X}(t) = tI - t^3J \]
   Find the velocity, speed, acceleration, tangent and normal vectors, and normal acceleration of the particle at any time \( t \).

4. Find the symmetric equation of the line through the point (2,-1,3) which is perpendicular to the vectors I - 2J + 3K and 3I - 2J + K.

5. Find the equation of the plane through the origin which is normal to the line given parametrically by
   \[ \mathbf{X} = (3I + 2J - K) + t(-I + J + 2K). \]

6. Find a vector normal to the plane through (0,0,0), (1,0,-1), (0,1,1).

7. Consider two different, but parallel planes given by the equations
   \[ \Pi_1 : (\mathbf{X} - \mathbf{X}_1) \cdot \mathbf{N} = 0, \quad \Pi_2 : (\mathbf{X} - \mathbf{X}_2) \cdot \mathbf{N} = 0. \]
   Express the distance between the planes as a function of \( \mathbf{X}_1, \mathbf{X}_2, \mathbf{N} \).

8. Find the distance of the point (3,2,1) from the line whose symmetric equations are
   \[ \frac{x - 2}{3} = \frac{y + 1}{4} = \frac{z - 1}{-2}. \]

9. A particle moves in space according to the formula \( \mathbf{X}(t) = I + tJ - t^2K \). Find the tangential and normal accelerations as functions of \( t \).
10. A particle moves in space according to the formula \( \mathbf{X}(t) = e^tI + e^2J - tK \).
    Find the normal acceleration at the point \( t = 0 \).