

**MA20103 Partial Differential Equations
Assignment 2**

1. Obtain the general solution of the PDE

$$(x^2 - yz)p + (y^2 - zx)q = z^2 - x$$

2. Find the integral surface of the PDE

$$(x - y)p + (y - x - z)q = z$$

passing through the circle $z = 1, x^2 + y^2 = 1$.

3. Find the general solution

i) $x^2p + y^2q = (x + y)z$

ii) $z(xp - yq) = y^2 - x^2$

iii) $2x(y + z^2)p + y(2y + z^2)q = z^2$

iv) $y^2p - xyq = x(z - 2y)$

4. Find particular solution of

i) $3z_x + 2z_y = 0, z(0, y) = y^2$

ii) $z_x - 2z_y = 0, z(x, 0) = x^2$

5. Solve

i) $p \cos(x + y) + q \sin(x + y) = z$

ii) $x(y^2 - z^2)p + y(z^2 - x^2)q = z(x^2 - y^2)$

iii) $z(p - q) = z^2 + (x + y)^2$