MATHS

ASSIGNMENT-3

MANAN
2018UIC3087
ICE-2

Non Linear Partial Differential Equation.

I) $f'(p,q)=0$

The complete solution is given by

$$z = ax + by + c \quad -(1)$$

where a, b are connected by the relation

$$f(a,b) = 0 \quad -(2)$$

from (1), we get $p = \frac{dz}{dx} = a$

$q = \frac{\partial z}{\partial y} = b$ From (2) we get b in terms of a.

let $b = \phi(a)$; here

$$z = ax + \phi(a)y + c$$

Q1) solve $pq + q + p = 0$

$$z = ax + by + c$$

where

$$ab + a + b = 0 \quad \text{or} \quad b = \frac{-a}{1+a}$$

hence $z = ax - \frac{ay}{1+a} + c$

Q2) solve $x^2p^2 + y^2q^2 = z^2$

Q5) $(p+q)(z-xp-yq)=1$

$$z = xp + yq + \frac{1}{p+q}$$

putting $p = a$ & $q = b$

$$z = ax + by + \frac{1}{a+b}$$

x ——— x