Assignment-2

KKSJ MANINAGAR SCIENCE COLLEGE

B. Sc. (Sem-IV)

MAT-204 (Advanced Calculus-II)

1. Obtain Partial differential equation for $f(x+y+z, x^2+y^2+z^2) = 0$.
2. Obtain Partial differential equation for $z = x + y + f(xy)$.
3. Eliminate a and b from (i) $z = ax+by+ab$ (ii) $(x-a)^2+(y-b)^2+z^2 = 0$.
4. Solve the following p.d.e.
   (i) $y^2p - xyq = x(z - 2y)$
   (ii) $pz - qz = z^2 + (x + y)^2$
   (iii) $xz(z^2 + xy)p - yz(z^2 + xy)q = x^4$
   (iv) $(mz - ny)p + (nx - lz)q = ly - mx$
   (v) $z(x + y)p + z(x - y)q = x^2 + y^2$
5. State and derive Green's theorem.
6. Evaluate $\int xdy + ydx$ from the point $(0, 0)$ to $(1, 1)$ over the following curves.
   (a) Straight line $y = x$.
   (b) the step path $y = 0, x = 1$
7. Evaluate $\int (x^2 + y)dx + (2x + y)dy$ from the point $(0, 0)$ to $(1, 1)$ over the following curves.
   (a) Straight line $y = x$.
   (b) the step path $y = 0, x = 1$

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