SEC-2

(3)

a) Here Laranye's subsidary eqⁿ are.

$$\frac{dx}{x^2-yz} = \frac{dy}{y^2-zx} = \frac{dz}{z^2-xy}$$

$$\therefore \frac{dx-dy}{(x-y)(x+y+z)} = \frac{dy-dz}{(y-z)(x+y+z)}$$

$$= \frac{dz-dx}{(z-x)(x+y+z)}$$

Taking the first two members, we have.

$$\frac{dx-dy}{x-y} = \frac{dy-dz}{y-z}$$

which on integration gives

$$\log(x-y) = \log(y-z) + \log a$$

or $\log\left(\frac{x-y}{y-z}\right) = \log a$

or $\frac{x-y}{y-z} = a$ —— (1)

Similarly, taking the last two members, we obtain

$$\frac{y-z}{z-x} = b \quad \text{—— (2)}$$

from eqⁿ (1) & (2) the general solution is

$$\phi\left(\frac{x-y}{y-z}, \frac{y-z}{z-x}\right) = 0$$

b) $y^2zp + x^2zq = y^2x$

The subsidary eqⁿ are

$$\frac{dx}{y^2z} = \frac{dy}{x^2z} = \frac{dz}{y^2x}$$

The first two fraction give $x^2dx = y^2dy$

Integrating, we get

$x^3 - y^3 = a$ —— (1)

Against the first and third fraction give $xdx = zdz$

Integrating, we get

$x^2 - z^2 = b$ —— (2)

Hence from eqⁿ (i) & (ii)

the soln is $x^3 - y^3 = f(x^2 - z^2)$