

1. is the system of linear eq<sup>n</sup>

$$x + ky + 3z = 0$$

$$3x + ky - 2z = 0$$

$$2x + 4y - 3z = 0$$

has a non-zero sol<sup>n</sup>  $(x, y, z)$  then  $\frac{xz}{y^2}$  is equal to

Sol<sup>n</sup>

non-zero solution, if

$$\begin{vmatrix} 1 & k & 3 \\ 3 & k & -2 \\ 2 & 4 & -3 \end{vmatrix} = 0$$

$$\Rightarrow (-3k + 8) - k(-9 + 4) + 3(12 - 2k) = 0$$

$$\Rightarrow -3k + 8 + 9k - 4k + 36 - 6k = 0$$

$$\Rightarrow -4k + 44 = 0 \Rightarrow k = 11$$

let

$$z = d$$

$$\text{then we get ; } x + 11y + 3d = 0 \quad \text{--- ①}$$

$$3x + 11y - 2d = 0 \quad \text{--- ②}$$

$$2x + 4y - 3d = 0 \quad \text{--- ③}$$

by ① & ②

$$x = \frac{5d}{2}; \quad y = -\frac{d}{2}; \quad z = d$$

$$\frac{xz}{y^2} = \frac{5d^2}{2 \left(-\frac{d}{2}\right)^2} = 10$$