

Test - 8 Whatsapp test

1) Solve for x and y:-

$$\underline{m}x + \underline{n}y = 1 \rightarrow (1) \quad \checkmark$$

$$m \times \underline{n}x + \underline{m}y = \left[\frac{(m+n)^2}{m^2+n^2} - 1 \right] \rightarrow (2)$$

2) Let $f(y) = 4y^2 - 8py + 8y - 9$.

The zeroes are negative of the other.

Find the value of p. Hence, find the zeroes. $a = \text{---}$, $b = \text{---}$, $c = \text{---}$

3) Find the number of hens and buffaloes if total of 1000 eyes and 1400 legs are there for hens and buffaloes.

(i) What is the equation for total no. of eyes?

(ii) What is the equation for total no. of legs?

(iii) Find the total no. of animals.

TEST 8 WHATSAPP TEST

$$1. \quad mx + ny = 1 \quad \rightarrow \textcircled{1} \quad \times \textcircled{n}$$

$$nx + my = \frac{(m+n)^2}{m^2+n^2} - 1 \quad \text{---} \textcircled{2}$$

$$= \frac{m^2 + n^2 + 2mn - m^2 - n^2}{m^2 + n^2}$$

$$nx + my = \frac{2mn}{m^2+n^2} \quad \rightarrow \textcircled{2} \quad \times \textcircled{m}$$

$$\textcircled{1} - \textcircled{2}$$

$$mnx + n^2y = n$$

$$- \left[mnx + m^2y = \frac{2m^2n}{m^2+n^2} \right]$$

$$= n^2y - m^2y = n - \frac{2m^2n}{m^2+n^2}$$

$$= y(n^2 - m^2) = n \left(1 - \frac{2m^2}{m^2+n^2} \right)$$

$$y(n^2 - m^2) = n \left(\frac{m^2 + n^2 - 2m^2}{m^2 + n^2} \right)$$

$$y = n \left(\frac{m^2 + n^2 - 2m^2}{n^2 - m^2} \right) \rightarrow \text{cancel}$$

$$\Rightarrow y = n \left(\frac{-n^2 - m^2}{(n^2 - m^2)(n^2 + m^2)} \right)$$

$$y = n \left(\frac{\cancel{n^2 - m^2}}{\cancel{(n^2 - m^2)}(m^2 + n^2)} \right)$$

$$y = \frac{n}{m^2 + n^2}$$

From ①

$$m^2 + n \left(\frac{n}{m^2 + n^2} \right) = 1$$

$$m^2x + \frac{n^2}{m^2+n^2} = 1$$

$$\frac{m^2x + mn^2x + n^2}{m^2+n^2} = 1$$

$$m^3x + mn^2x + n^2 = m^2 + n^2$$

~~x(m~~

$$x(m^2+n^2) = m^2$$

$$x = \frac{m^2}{m^2+n^2}$$

$$\therefore x = \frac{m}{m^2+n^2} \text{ and } y = \frac{n}{m^2+n^2}$$

a. Let $f(y) = 4y^2 - 8py + 8y - 9$

Let the zeroes be α and $-\alpha$.

$$f(y) = 4y^2 - 8py + 8y - 9 = 0$$

$$4y^2 + y(-8p + 8) - 9 = 0$$

Sum of roots = $-\frac{\text{coefficient of } y}{\text{coefficient of } y^2}$

$$A - A = -\frac{b}{a}$$

$$0 = -\frac{(-8p + 8)}{4}$$

$$0 = +8p - 8$$

$$8p = 8$$

$$p = 1$$

$$f(y) = 4y^2 + y(-8(1) + 8) - 9 = 0$$

$$= 4y^2 + (-9) = 0$$

$$= 4y^2 - 9 = 0$$

$$(2y)^2 - (3)^2 = 0$$

$$(2y - 3)(2y + 3) = 0$$

$$y = \frac{3}{2} \text{ or } y = -\frac{3}{2}$$

\therefore The zeroes are $\frac{3}{2}$ and $-\frac{3}{2}$.

3: Let the no. of hens be x and buffaloes be y .

$$2x + 2y = 1000$$

$$x + y = 500$$

ii $2x + 4y = 1400$

$$x + 2y = 700$$

iii Total animals = no. of hens + buffaloes.

hens (x) buffaloes (y)
legs = 2 legs = 4
eyes = 2 eyes = 2

$$2x + 2y + 4x + 2y =$$

$$2x + 4x = 1000$$

2	2
4	1
4	8

$$\begin{array}{r} x + y = 500 \quad \rightarrow \textcircled{1} \\ - [x + 2y = 700] \quad \rightarrow \textcircled{2} \end{array}$$

$$y - 2y = -200$$

$$-y = -200$$

$$y = 200$$

From $\textcircled{1}$,

$$x + 200 = 500$$

$$x = 300$$

\therefore Total no. of animals = 500

