LINEAR EQUATION IN TWO VARIABLES -TEST

Question 1 (Consistency Analysis) [8 marks]

By comparing ratios $\frac{a_1}{a_2}$, $\frac{b_1}{b_2}$, $\frac{c_1}{c_2}$, determine if the system is consistent/inconsistent:

$$5x - 4y + 8 = 0 \quad \text{and} \quad 7x + 6y - 9 = 0.$$

Question 2 [8 marks]

Solve algebraically:

$$\sqrt{2}x + \sqrt{3}y = 0 \quad \text{and} \quad \sqrt{3}x - \sqrt{8}y = 0.$$

Question 3 [8 marks]

Solve by elimination:

$$0.2x + 0.3y = 1.3 \quad \text{and} \quad 0.4x + 0.5y = 2.3.$$

Question 4 (Word Problem - Substitution) [8 marks]

Five years ago, Jacob's age was seven times his son's age. Five years hence, Jacob will be three times as old as his son. Find their present ages using substitution.

Question 5 [8 marks]

Solve algebraically:

$$\frac{3x}{2} - \frac{5y}{3} = -2 \quad \text{and} \quad \frac{x}{3} + \frac{y}{2} = \frac{13}{6}.$$

Question 6 [8 marks]

The ratio of incomes of two persons is 9:79:7, and their expenditures ratio is 4:34:3. If each saves ₹2000/month, find their monthly incomes using elimination.

Question 7 [8 marks]

Determine if the rails represented by x+2y−4=0*x*+2*y*−4=0 and 2x+4y−12=0 2*x*+4*y*−12=0 will cross. Justify algebraically.

Question 8 ([8 marks]

A two-digit number and its reverse sum to 66. The digits differ by 2. Find all possible numbers using elimination or substitution.