

Assignment – 3

Linear equations in 2 variables

1. On comparing $\frac{a_1}{a_2}$, $\frac{b_1}{b_2}$, $\frac{c_1}{c_2}$ state the nature of lines whether they

1) intersect at a point

2) are parallel

3) are coincident

a) $5x - 7y + 12 = 0$

$$10x + 7y + 11 = 0$$

b) $3x + 4y + 5 = 0$

$$6x + 12y + 15 = 0$$

c) $7x + 2y - 3 = 0$

$$14x + 4y + 4 = 0$$

Solution:

$$\text{a) } \frac{5}{10} \neq \frac{-7}{7}, \quad \frac{1}{2} \neq -1$$

\therefore The lines will intersect at a point.

$$\text{b) } \frac{3}{6} = \frac{4}{12} = \frac{5}{10} = \frac{1}{2}$$

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

\therefore The lines are coincident.

$$\text{c) } \frac{7}{14} = \frac{2}{4} \neq \frac{-3}{4}$$

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

\therefore The lines are parallel.

2. Given a linear equations $x - 3y = 5$. Write another equation such that. The two equations are consistent.

Solution:

$x - 3y = 5$ another equation such that 2 equations are consistent.

$$5x + 4y = 8$$

$$2x - 6y = 10$$

3. Frame an equation in 2 variables for the given situation.
Father's age is 2 years more than twice the age of his son.

Solution:

Let son's age = x ,

Father's age = y

$$\therefore y = 2x + 2$$

4. Solve graphically.

$$2x - y = 5$$

$$x - 3y = 5$$

Solution:

$$2x - y = 5$$

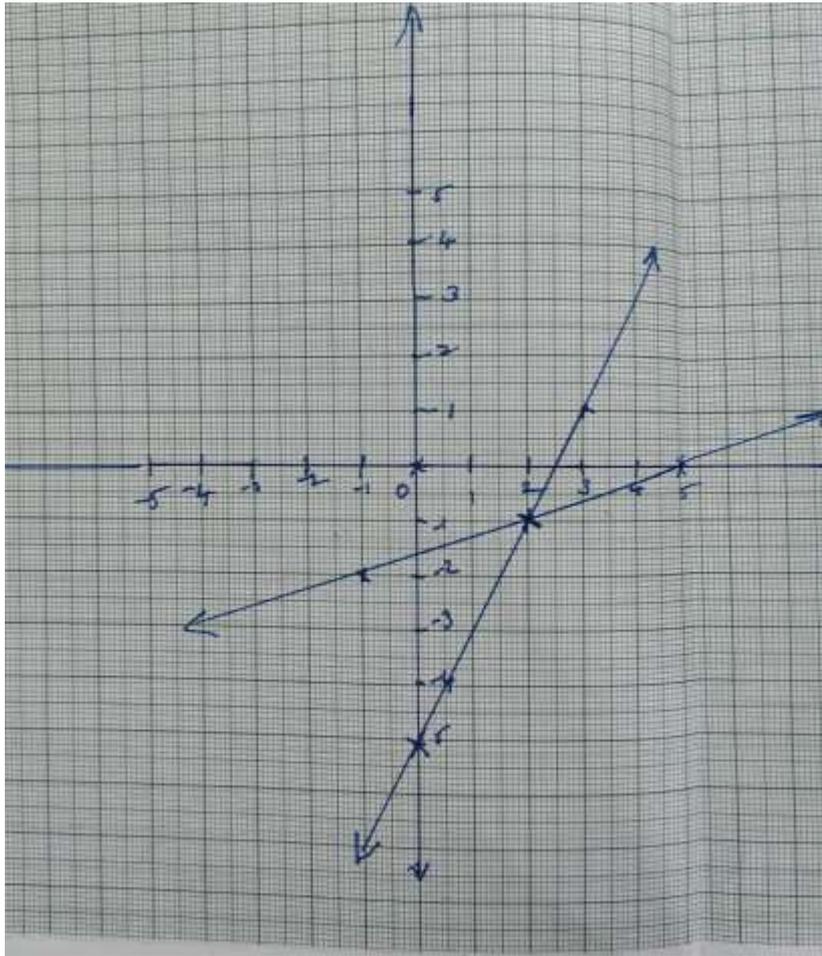
$$\Rightarrow 2x - 5 = y$$

x	0	2	3
y	-5	-1	1

$$x - 3y = 5$$

$$\Rightarrow x = 5 + 3y$$

x	5	2	-1
y	0	-1	-2



$$\therefore x = 2, y = -1$$