EXERCISE 8.2

Q1. Draw the conversion graph between litres and gallons using the relation 9 litres = 2 gallons (approximately), and taking litres along horizontal axis and gallons along vertical axis. From the graph, read

(i) the number of gallons in 18 litres

(ii) the number of litres in 8 gallons

Solution:

9 litres = 2 gallons

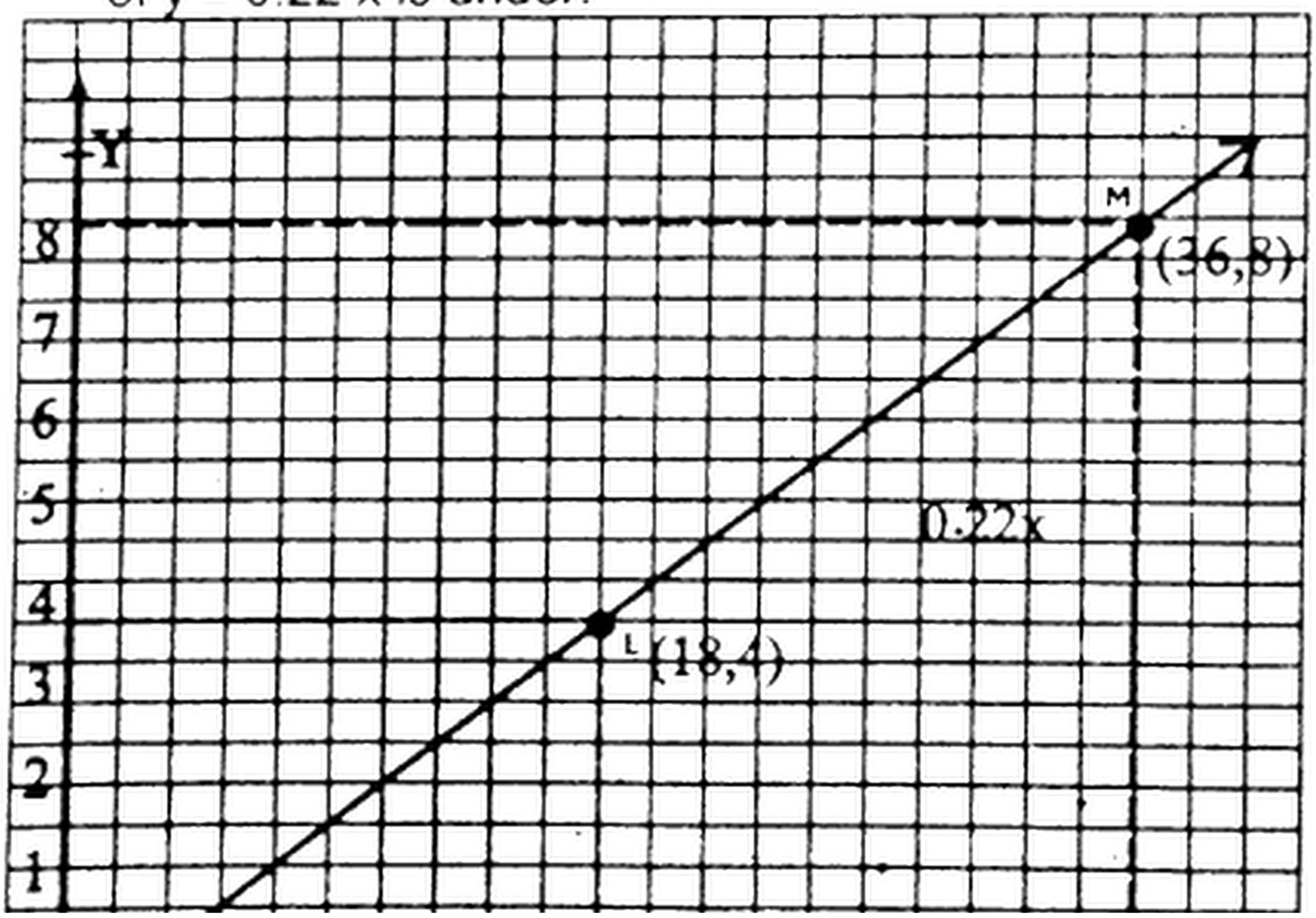
As liters are represented along horizontal axis and gallon along y-axis we have

$y = \frac{2}{9}x$ or $y = 0.22\,x$ (approx)

The table for values of x and y is

x	0	1	2	3	5
y	0	0.22	0.44	0.66	1.1

Plotting these points and joining them we get the graph of y = 0.22 x is under:



(i) To read the number of gallons in 18 litres. We draw the vertical line through point showing 18 litres. It meets the graph of y = 0.22 x at L. We read that L shows 4 gallons.

(ii) The number of litres in 8 gallons. We draw the horizontal line through the point showing 8 gallons. It meets the graph of y = 0.22 x at M. Against M we read 36 litres.

Q2. On 15.03.2008 the exchange rate of Pakistani currency and Saudi Riyal was as under:
1 S. Riyal = 16.70 Rupees

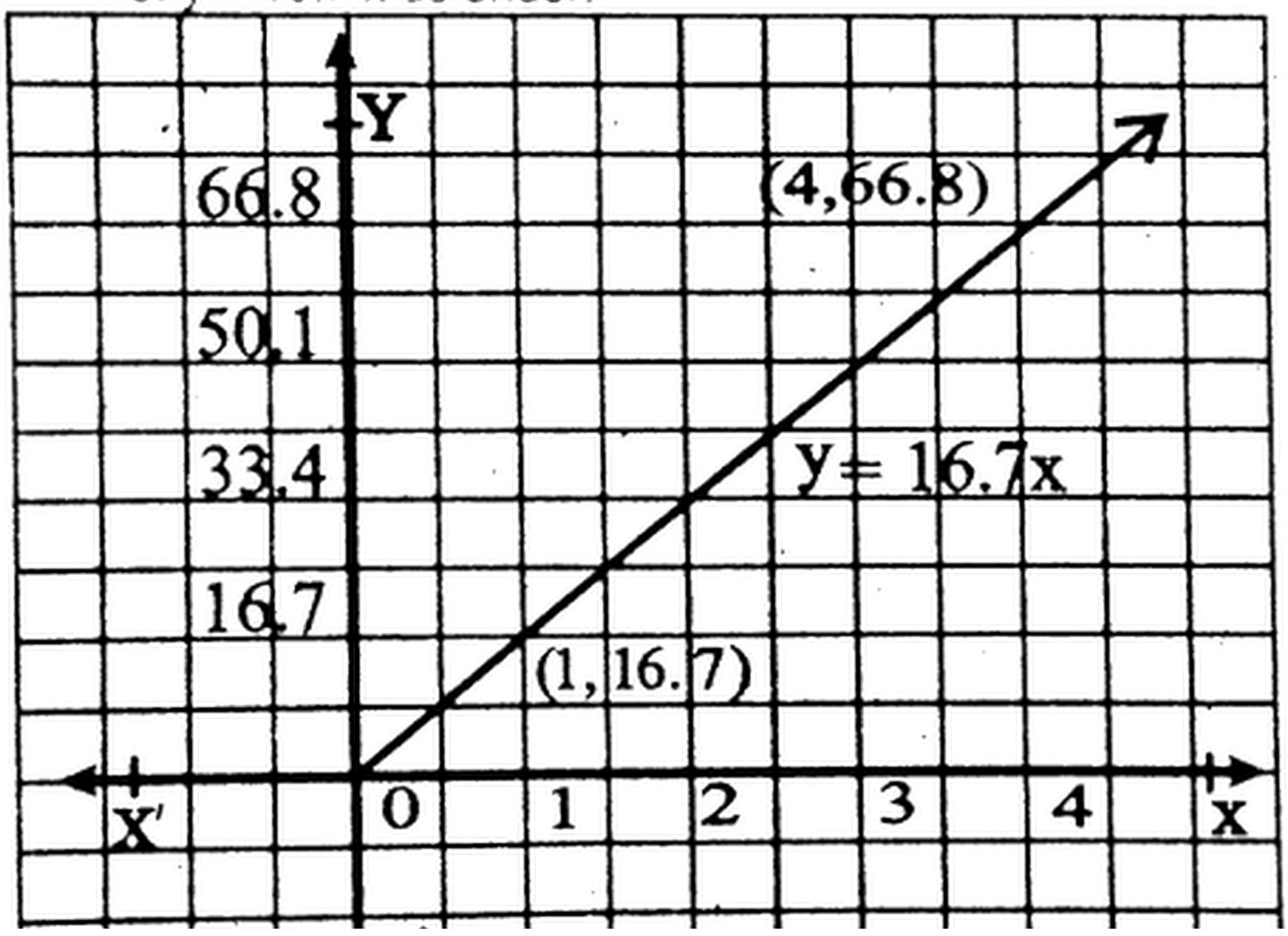
Solution:

y = 16.70 x

The table for values of x and y is as under:

x	0	1	2	4
y	0	16.7	33.4	66.8

Plotting these points and joining them we get the graph of y = 16.7 x as under:



Q3. Sketch the graph for following lines.

(a) $x - 3y + 2 = 0$ (b) $3x - 2y - 1 = 0$
(c) $2y - x + 2 = 0$ (d) $y - 2x = 0$
(e) $3y - 1 = 0$ (f) $y + 3x = 0$
(g) $2x + 6 = 0$

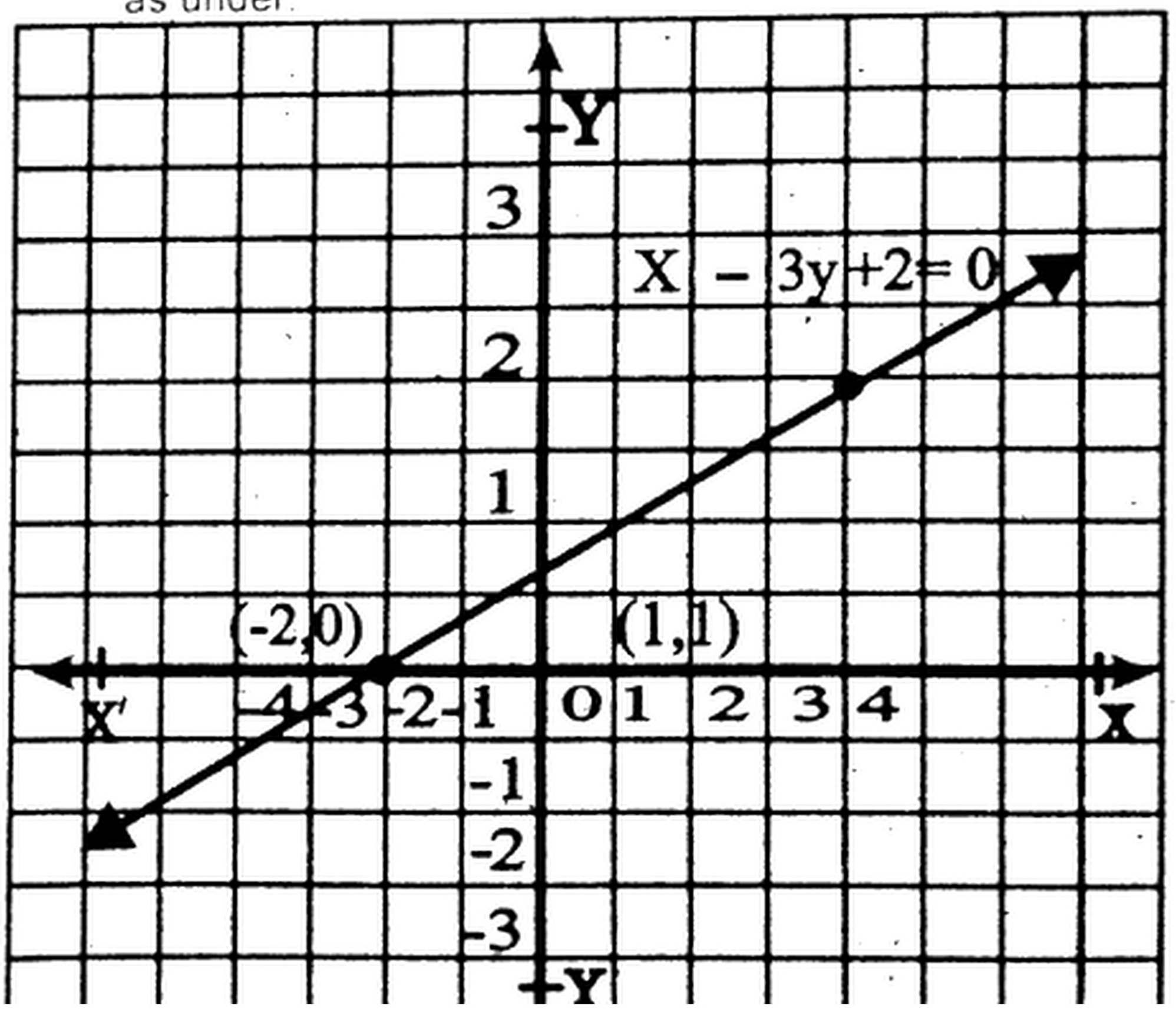
(a) $x - 3y + 2 = 0$

or $y = \frac{x+2}{3}$

We tabulate the values of (x, y) as under:

x	-2	-1	0	1	2	3	4
y	0	0.3	0.66	1	1.3	2.66	2

Plotting these points we get the graph of the equation as under:



(b) $\mathbf{3x - 2y - 1 = 0}$

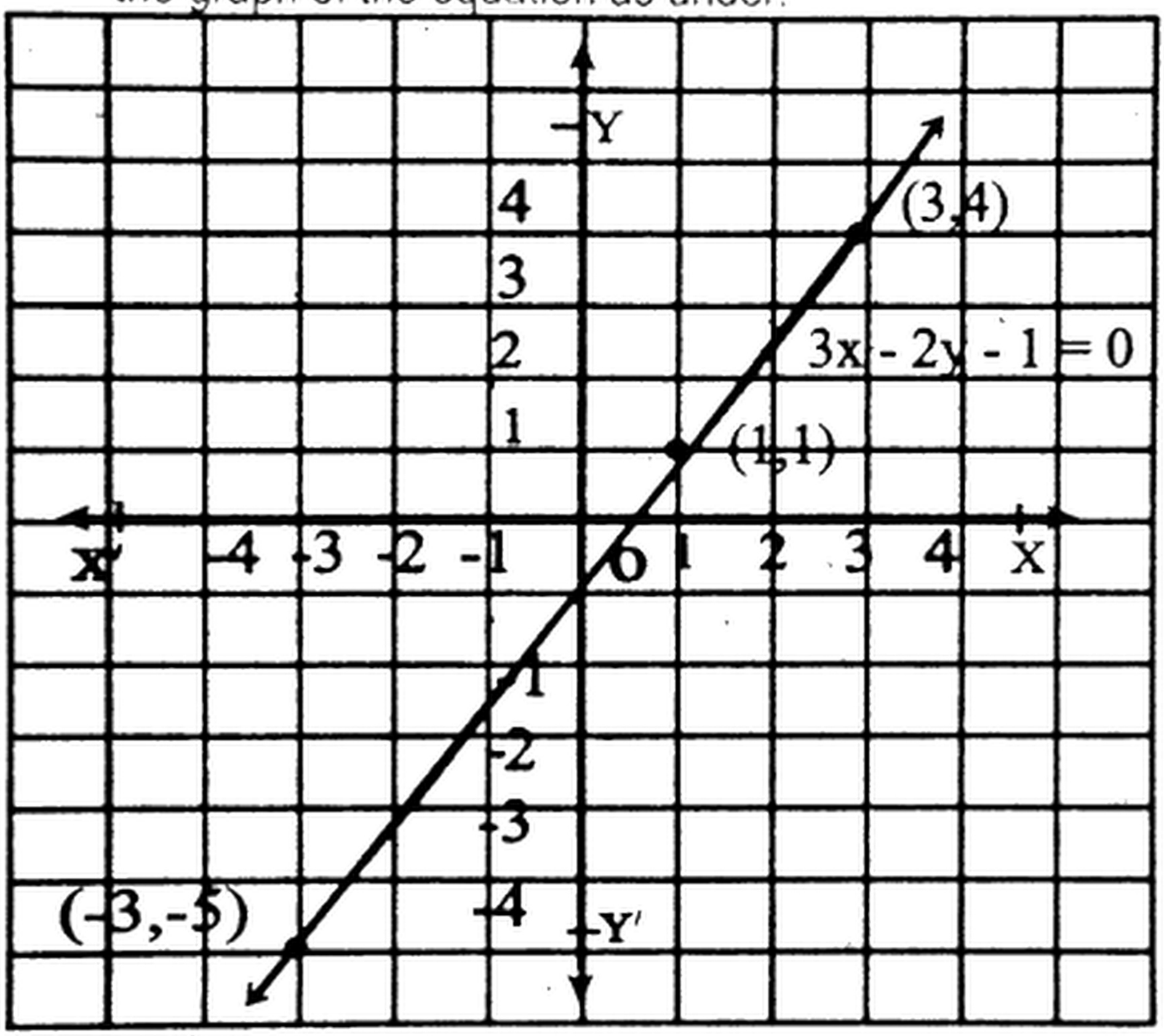
or $3x - 1 = 2y$

or $y = \frac{3x-1}{2}$

We tabulate the values of (x, y) as under:

x	-3	-2	-1	0	1	2	3
y	-5	-3.5	-2	-0.5	1	2.5	4

Plotting the values of x and y and joining these we get the graph of the equation as under:



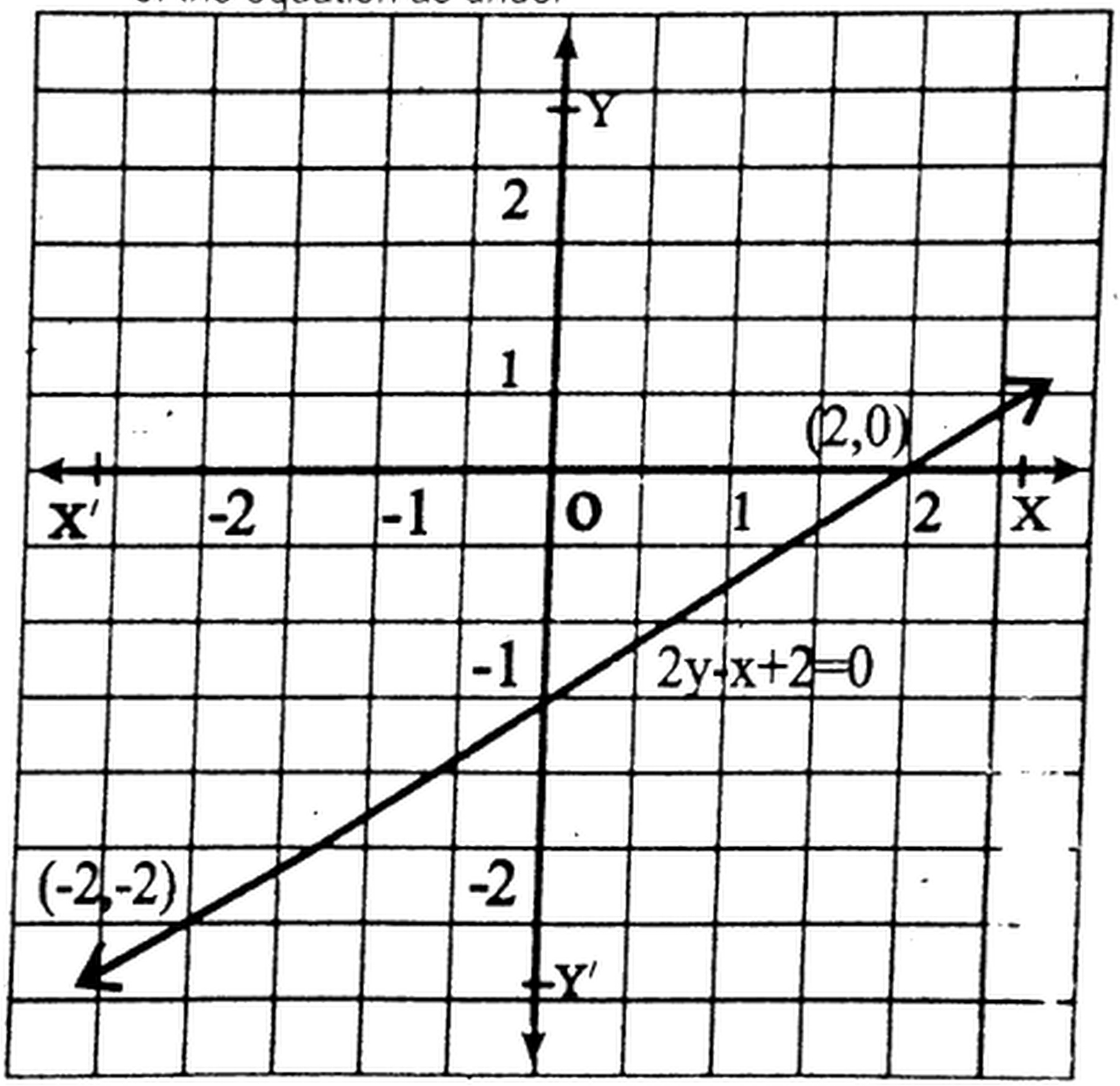
(c) $\mathbf{2y - x + 2 = 0}$

or $2y = x - 2$

or $y = \frac{x-2}{2}$

We calculate the values (x, y) as under:

Plotting these points and joining them we get the graph of the equation as under



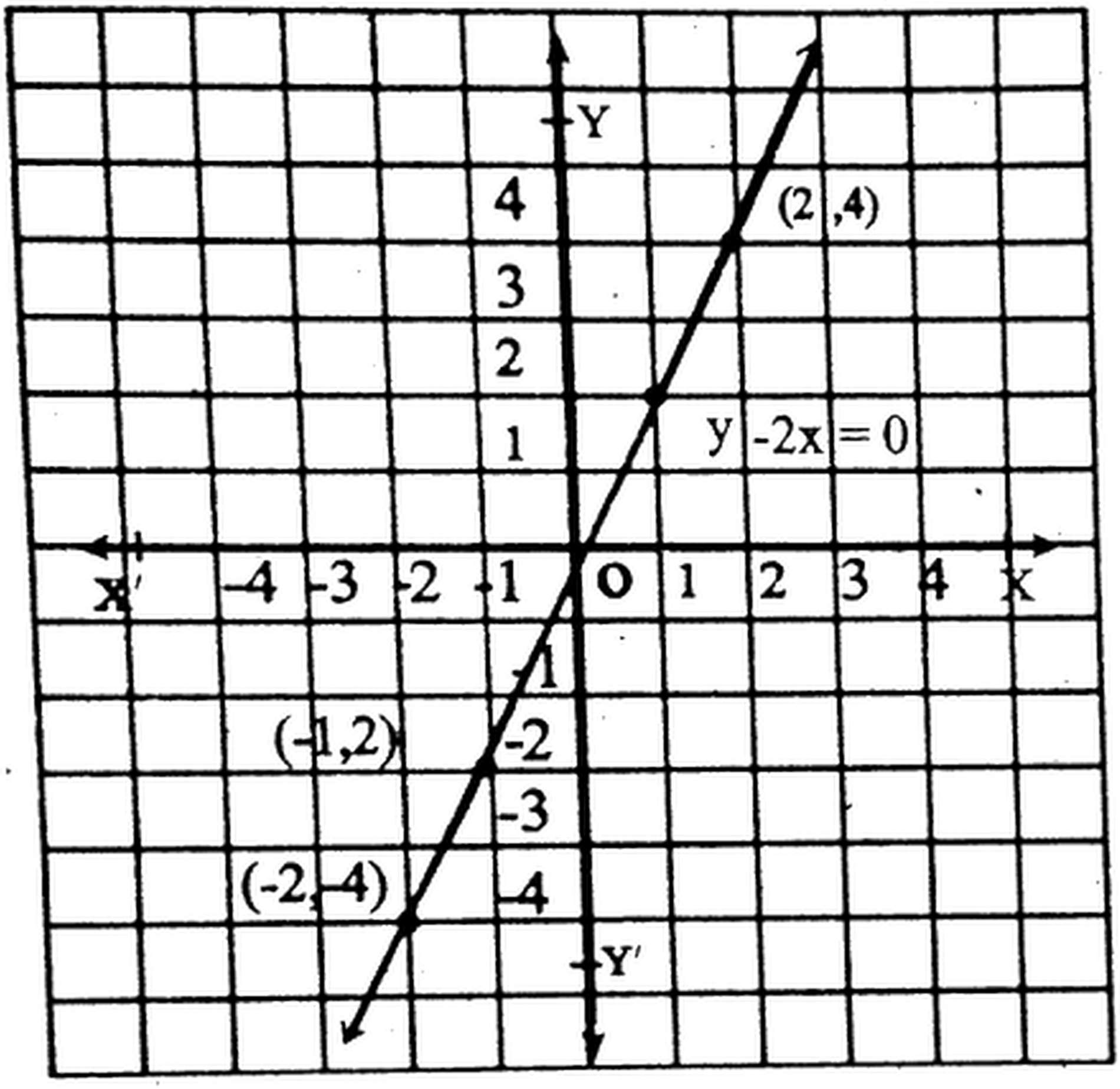
(d) $\mathbf{y - 2x = 0}$

or $y = 2x$

We tabulate the values of (x, y) as under:

x	-2	-1	0	1	2
y	-4	-2	0	2	4

Plotting these points and joining them we get the graph of the equation as under:



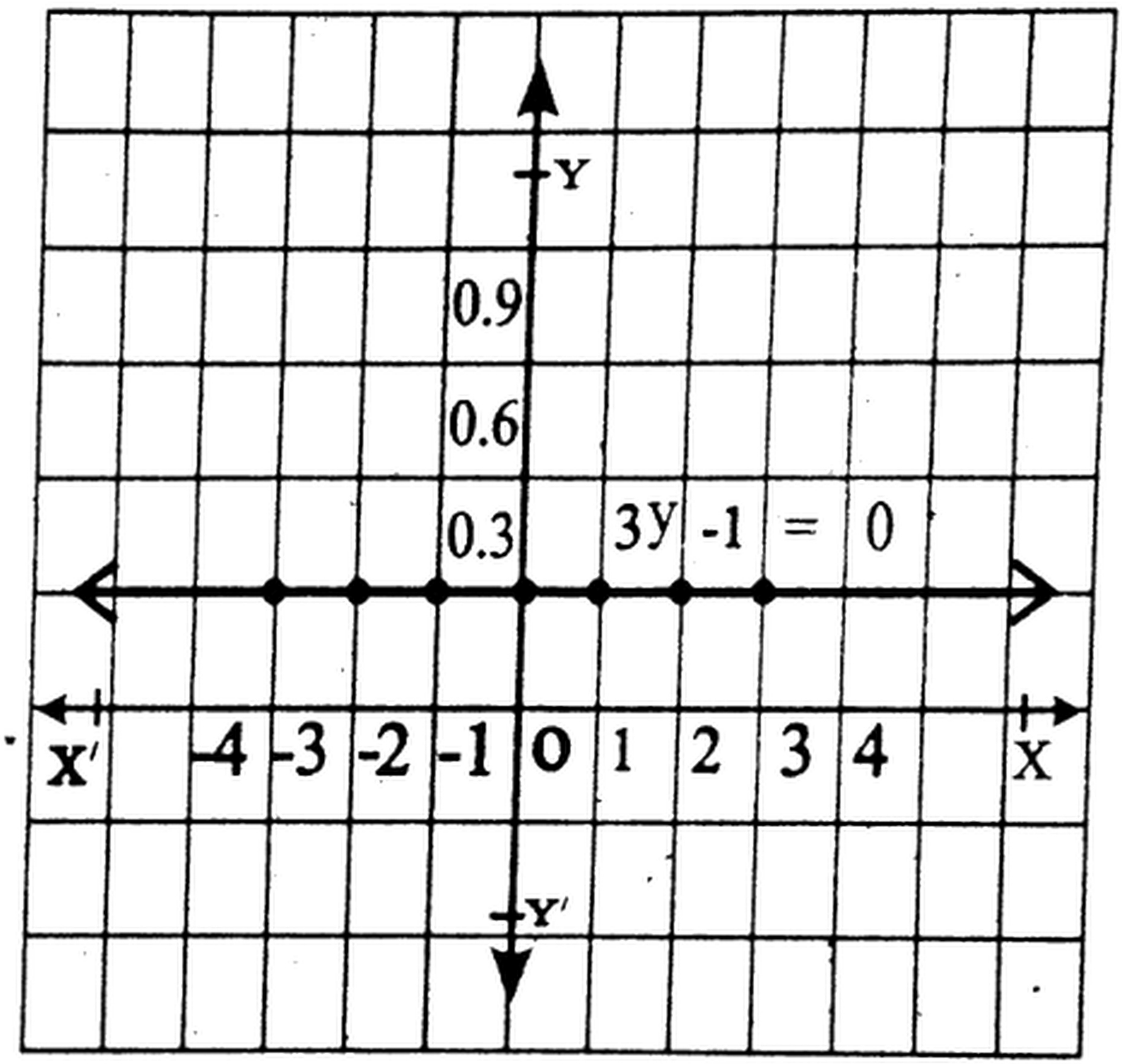
(e) $\mathbf{3y - 1 = 0}$

or $y = \frac{1}{3} = 0.3$

We tabulate the values of y against x as under:

x	...	2	1	0	1	2
y	0.3	0.3	0.3	0.3	0.3	0.3

Plotting these points in the plane and joining them we get the graph of the equation 3y – 1 = 0.



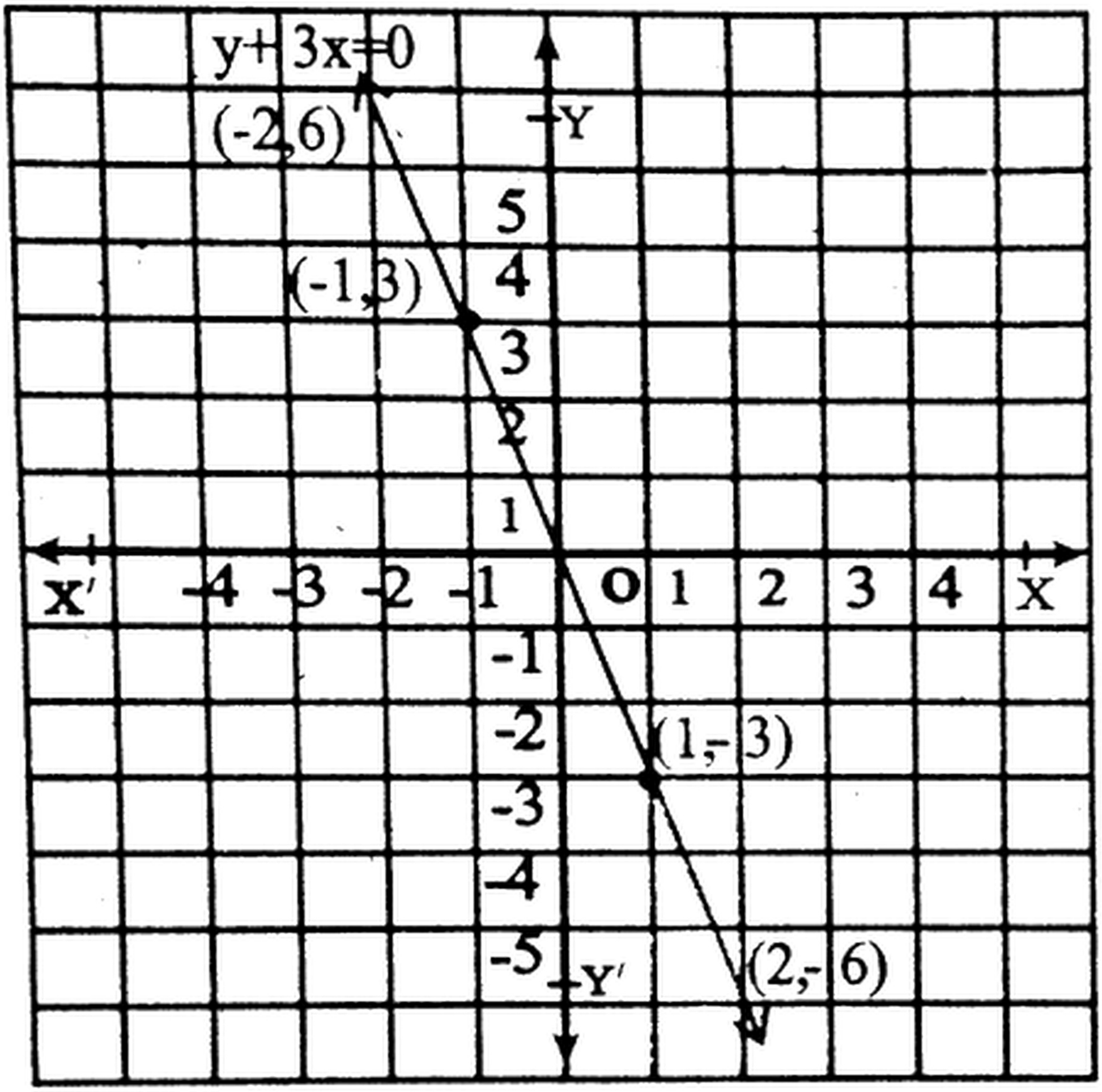
(f) $\mathbf{y + 3x = 0}$

or $y = -3x$

We tabulate the points (x, y) as under:

x	-2	-1	0	1	2
y	6	3	0	-3	-6

Plotting these points and joining them we get the graph of the equation $y + 3x = 0$ is under:



(g) **2x + 6 = 0**

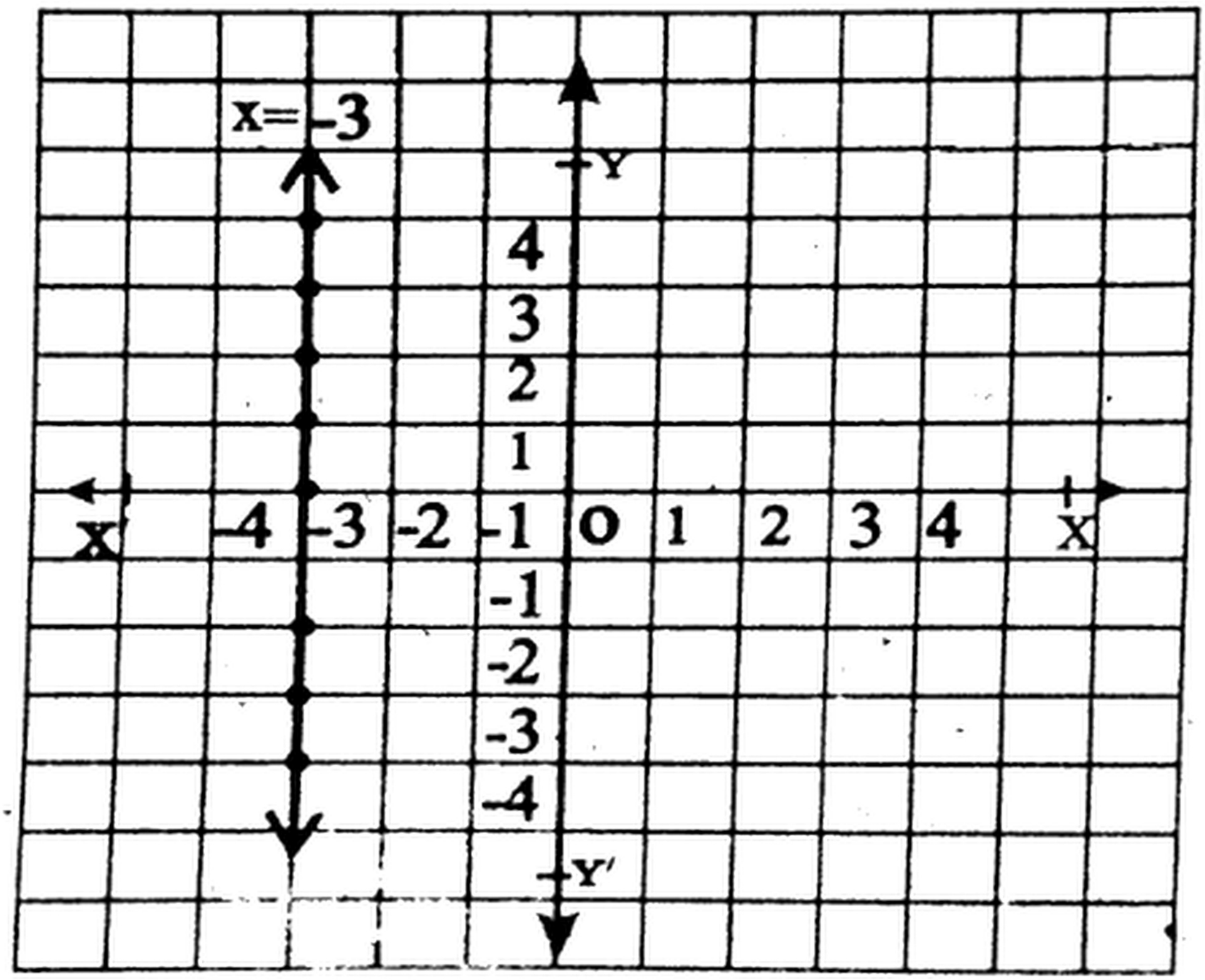
or $2x = -6$

or $x = -3$

We tabulate the points of the equation.

x	-3	-3	-3	-3	-3	-3
y	-2	-1	0	1	2	...

Plotting them joining them we get the graph of the equation as under.



Q4. Draw the graph for following relations.

(i) One mile = 1.6 km

(ii) One Acre = 0.4 Hectare

(iii) $F = \frac{9}{5}C + 32$

(iv) One Rupee = $\frac{1}{36}$ \$

Solution:

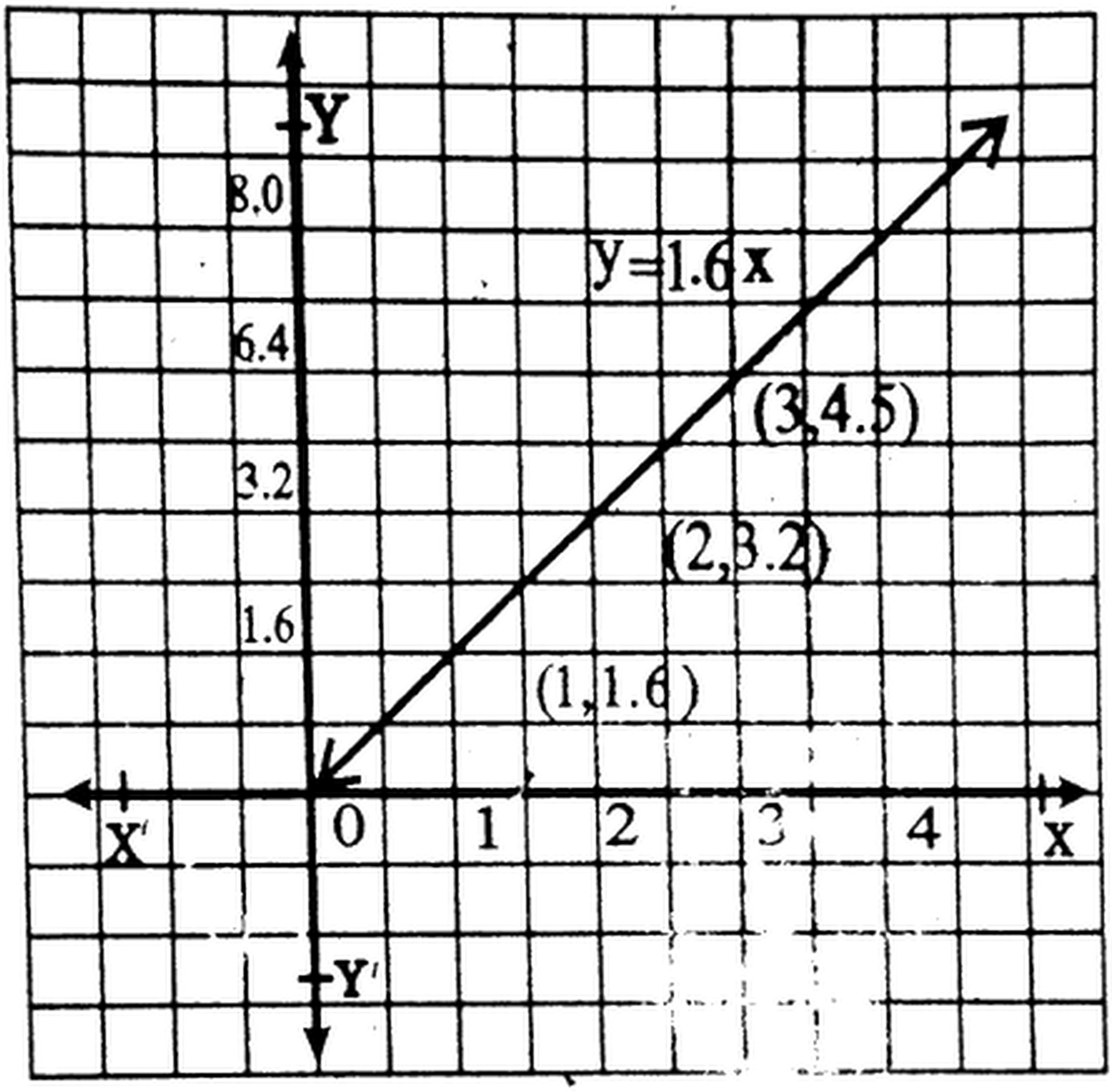
(i) One mile = 1.6 km

Let y = 1.6x

We tabulate value of x and y as under:

x	0	1	2	3	4
y	0	1.6	3.2	4.8	6.4

Mile is taken along x-axis and Km along y-axis.



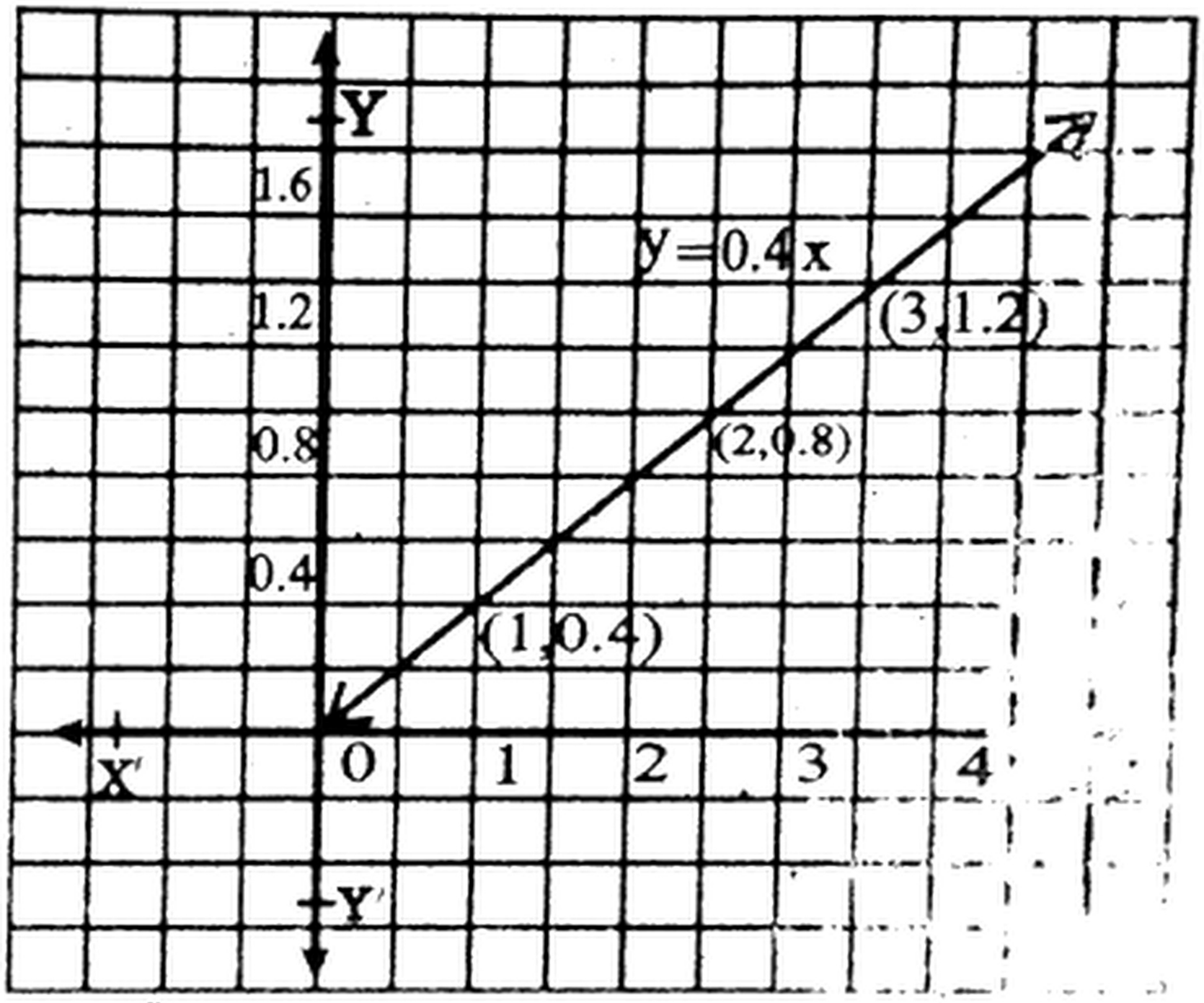
(ii) On Acre = 0.4 Hectare

If Acre is measured along x-axis and hectare along y-axis then $y = 0.4\,x$

The ordered pairs are tabulated in the following table.

x	0	1	2	4
y	0	0.4	0.8	1.2

The corresponding points (0, 0), (1, 1.4), (2, 0.8) etc, are plotted in the xy-plane. Join of which forms the graph of conversion of $y = 0.4\,x$.

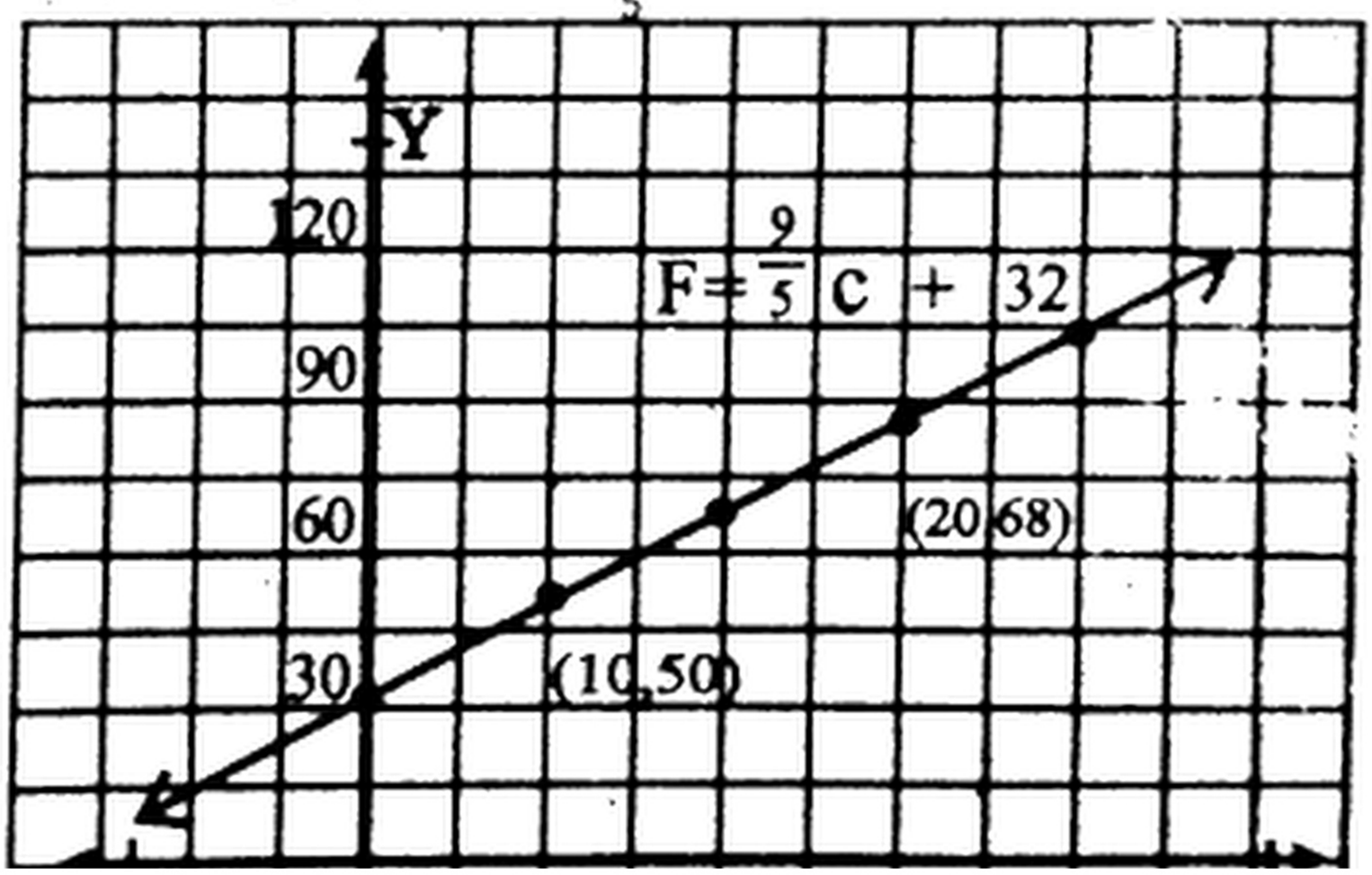


(iii) $F = \frac{9}{5}C + 32$

We tabulate the values of C and F

C	0°	10°	20°	30°	40°
F	32°	50°	68°	86°	104°

Plotting these points and joining then: we get the required graph of $F = \frac{9}{5}C + 32$ as under:



(iv) One Rupee = $\frac{1}{86}$ \$

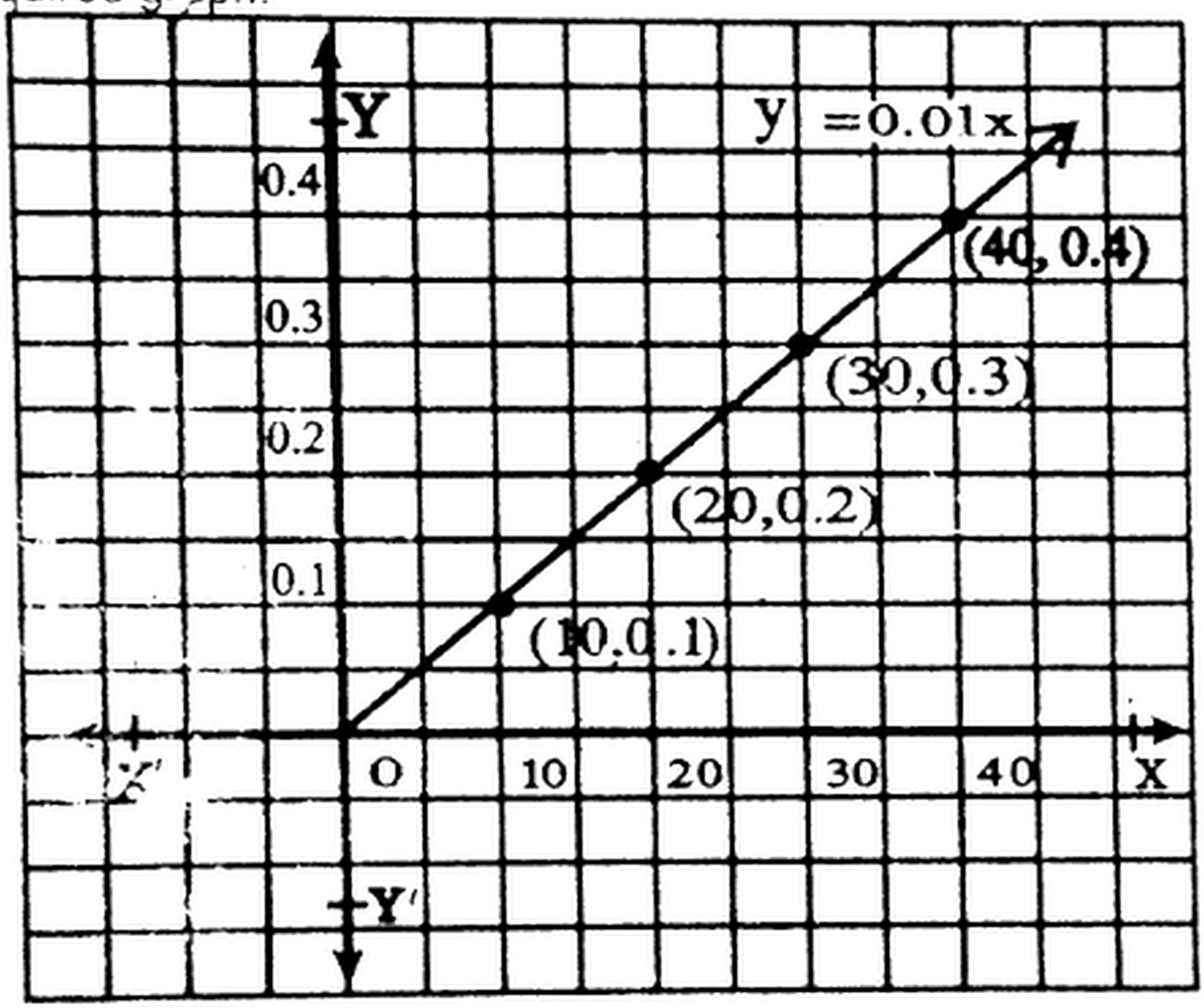
or One Rupee = 0.01\$

If \$ y is an expression of Rs. X, expressed under the rule y = 0.01 x

We tabulate the value of x and y as under:

x	0	10	20	30	40
y	0	0.1	0.2	0.3	0.4

Plotting the points corresponding to the ordered pairs (x, y) from the table and joining them we get the required graph.



EXERCISE 8.3

Solve the following pair of equations in x and y graphically.