

Answer on Question #42623-Math-Analytic Geometry

Find the equation of the line with the given condition

1. Passing through (-3,7) and y-intercept 3

Solution

We have two equations $y - 7 = m(x + 3)$ and $y = mx + 3$. So

$$y = mx + 3 \\ m + 7 = mx + 3 \rightarrow m = -\frac{4}{3}.$$

Answer: $y = -\frac{4}{3}x + 3$.

2. Passing through (-3,4) and x-intercept -1.

Solution

X-intercept of -1 indicates the point is (-1,0).

The slope is

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 0}{-3 - (-1)} = -2.$$

The equation of the line is

$$y = -2(x + 1).$$

Answer: $y = -2(x + 1)$.

3. Through (-3,8) parallel to $7x + 2y + 9 = 0$

Solution

The slope of $7x + 2y + 9 = 0$ is $m = -\frac{7}{2}$.

The equation of the line is

$$y - 8 = -\frac{7}{2}(x + 3) \rightarrow y = -\frac{7}{2}x - \frac{5}{2}.$$

Answer: $y = -\frac{7}{2}x - \frac{5}{2}$.

4. Through (4,-7) parallel to $3x + y + 6 = 0$

Solution

The slope of $3x + y + 6 = 0$ is $m = -3$.

The equation of the line is

$$y + 7 = -3(x - 4) \rightarrow y = -3x + 5.$$

Answer: $y = -3x + 5$.

5. Slope 1/2 and through the point of intersection of $3x + y + 2 = 0$ and $x + 3y + 6 = 0$

Solution

The point of intersection of $3x + y + 2 = 0$ and $x + 3y + 6 = 0$ is giving by a system

$$\begin{cases} 3x' + y' + 2 = 0 \\ x' + 3y' + 6 = 0 \end{cases} \rightarrow x' = 0, \quad y' = -2.$$

The equation of the line is

$$y + 2 = \frac{1}{2}x \rightarrow y = \frac{1}{2}x - 2.$$

Answer: $y = \frac{1}{2}x - 2.$

6. x-intercept -3 and parallel to $4x + 7y = 1$

Solution

The slope of $4x + 7y = 1$ is $m = -\frac{4}{7}$.

X-intercept of -3 indicates the point is (-3,0).

The equation of the line is

$$y = -\frac{4}{7}(x + 3).$$

Answer: $y = -\frac{4}{7}(x + 3).$