

Equation of a Line (From 2 points)

1. Find the equation of the line that passes through the points $(-4, 5)$ and $(2, 3)$.

2. Find the equation of the line that passes through the points $(-7, 2)$ and $(-6, -2)$.

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1. Find the equation of the line that passes through the points (-4, 5) and (2, 3).

The slope of the line is

$$\begin{aligned}m &= \frac{5 - 3}{-4 - 2} \\ &= \frac{2}{-6} = -\frac{1}{3}.\end{aligned}$$

The y-intercept point of the line is

$$3 = -\frac{1}{3}(2) + b$$

$$3 = -\frac{2}{3} + b$$

$$\frac{11}{3} = b.$$

The equation of the line is $y = -\frac{1}{3}x + \frac{11}{3}$.

2. Find the equation of the line that passes through the points (-7, 2) and (-6, -2).

Using the points (-7, 2) and (-6, -2), the slope of the line is

$$\begin{aligned}m &= \frac{2 - (-2)}{-7 - (-6)} \\ &= \frac{4}{-1} \\ &= -4.\end{aligned}$$

$$-2 = -4(-6) + b$$

$$-2 = 24 + b$$

$$-26 = b$$

The equation of the line is $y = -4x - 26$.