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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The slope of the line is

$$m = \frac{5-3}{-4-2}$$

$$= \frac{2}{-6} = -\frac{1}{3}.$$

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

$$m = \frac{2-(-2)}{-7-(-6)}$$

$$= \frac{4}{-1}$$

$$= -4.$$

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

$$-2 = 24 + b$$

$$-26 = b$$

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