Example 3

Question

A line passes through the points $(1, 2)$ and $(4, -1)$. What is the equation of this line?

Answer

First we can calculate the slope.

$$
\begin{aligned}
m &= \frac{y_2 - y_1}{x_2 - x_1} \\
&= \frac{-1 - 1}{4 - 2} \\
&= \frac{-2}{2} \\
&= -1
\end{aligned}
$$

So the slope is $m = -1$. Using this value and one of the points, $(1, 2)$, we can solve for b:

$$
\begin{aligned}
y &= -x + b \\
2 &= -(1) + b \\
3 &= b
\end{aligned}
$$

So the equation is $y = -x + 3$.