### 10.5 Key Concepts 1 Equation of a Line Given the Slope and a Point Worked

 ExampleExample: Find the equation of a line with a slope of $-\frac{3}{4}$ passing through the point $(-1,1)$.

Solution: Substitute the slope and the coordinates of the point into the general equation $y=m x+b$. Then, solve for $b$.

$$
\begin{aligned}
\mathrm{y} & =\mathrm{mx}+\mathrm{b} \\
1 & =-\frac{3}{4}(-1)+\mathrm{b} \\
1 & =\frac{3}{4}+\mathrm{b} \\
1-\frac{3}{4} & =\frac{3}{4}+\mathrm{b}-\frac{3}{4} \quad \text { The equation of the line is } \mathrm{y}=-\frac{3}{4} \mathrm{x}+\frac{1}{4} . \\
\frac{4}{4}-\frac{3}{4} & =\mathrm{b} \\
\frac{1}{4} & =\mathrm{b}
\end{aligned}
$$

## Practice:

1. Find the equation of a line with a slope of -5 passing through the point ( $1,-1$ ).
2. Find the equation of a line with a slope of $-\frac{1}{2}$ passing through the point ( $3,-1$ ).

Answers: 1. $y=-5 x+4,2 . y=-\frac{1}{2} x+\frac{1}{2}$

