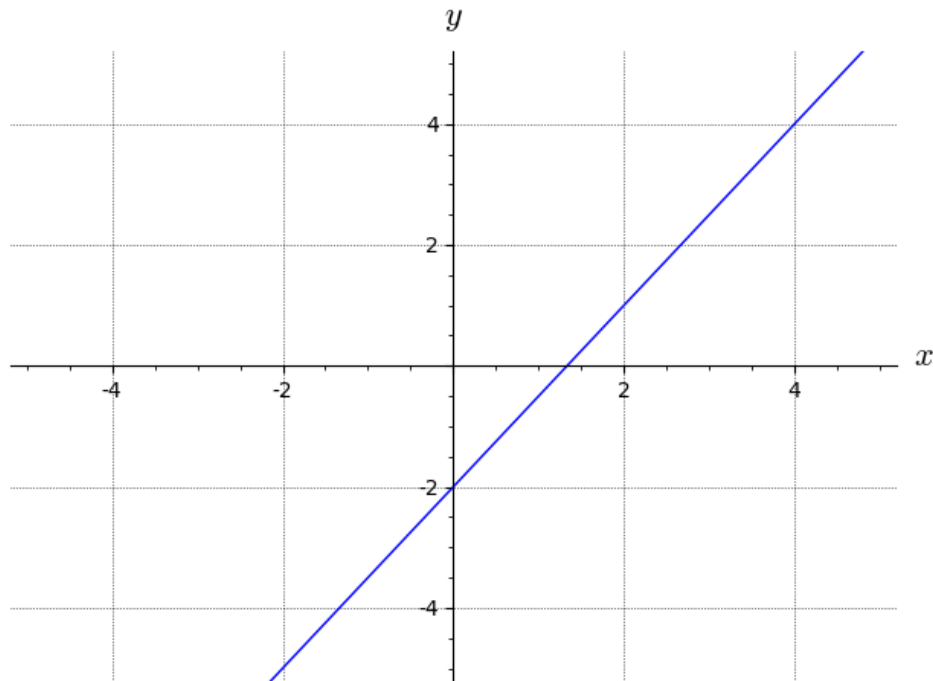


Linear Functions

The linear functions have the form $f(x) = mx + b$, where m and b are fixed, real numbers with $m \neq 0$. The graph of $f(x) = mx + b$ is the line with slope m and y -intercept $(0, b)$. The example shown below is the graph of $f(x) = \frac{3}{2}x - 2$.



Properties of the linear function $f(x) = mx + b$:

- Domain: All real numbers, $(-\infty, \infty)$
- Range: All real numbers, $(-\infty, \infty)$
- Symmetry: In general, there is no symmetry. However, in the special case that $b = 0$, f is an odd function, and the graph is symmetric about the origin.
- Increasing/Decreasing:
 - If $m > 0$, f is increasing on $(-\infty, \infty)$.
 - If $m < 0$, f is decreasing on $(-\infty, \infty)$.
- Extreme values: None.
- Interesting features:
 - The graph is the line with slope m and y -intercept $(0, b)$.