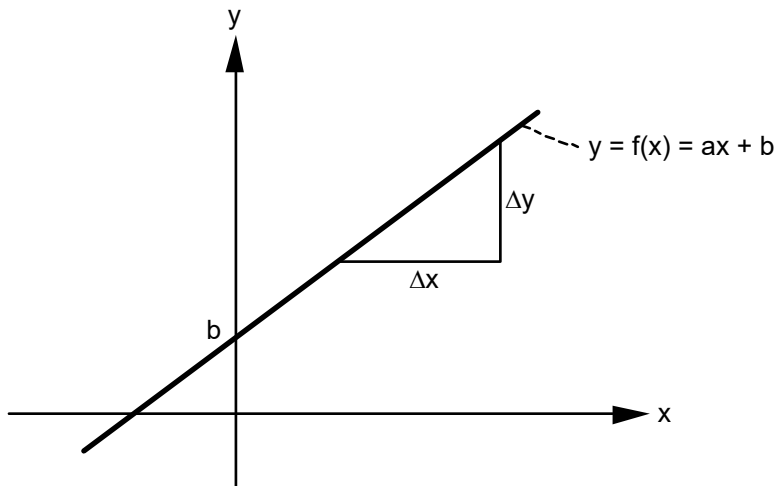


Linear function

Definition

| | |
|-------------------------------|----------------------------------------|
| $f: D \rightarrow \mathbb{R}$ | $(D \subseteq \mathbb{R})$ |
| $x \mapsto y = f(x) = ax + b$ | $(a \in \mathbb{R}, b \in \mathbb{R})$ |



$a = \frac{\Delta y}{\Delta x}$: **slope**

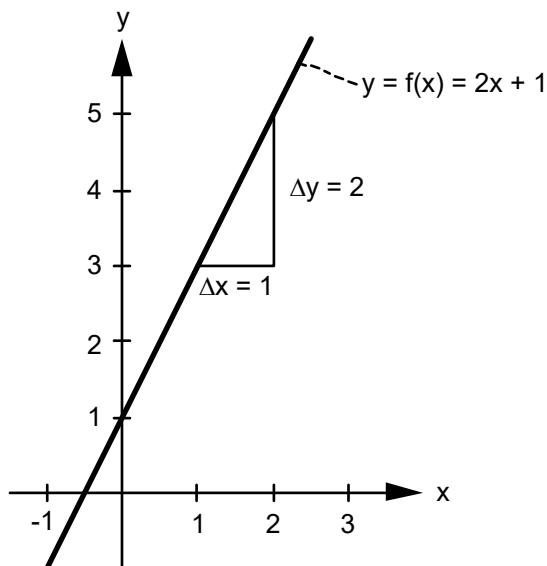
special case $a = 0$: **constant function**

b : **intercept**

special case $b = 0$: **direct proportionality** ("y is directly proportional to x.")

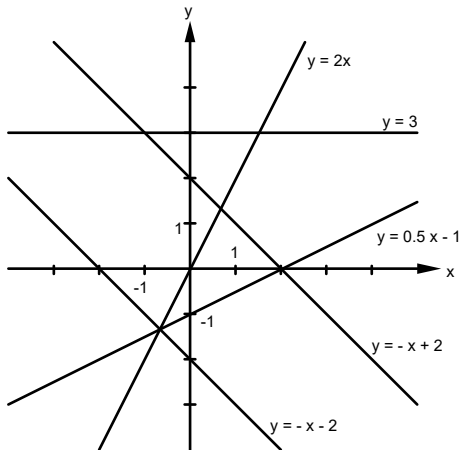
Examples

1. $f: \mathbb{R} \rightarrow \mathbb{R}$
 $x \mapsto y = f(x) = 2x + 1$



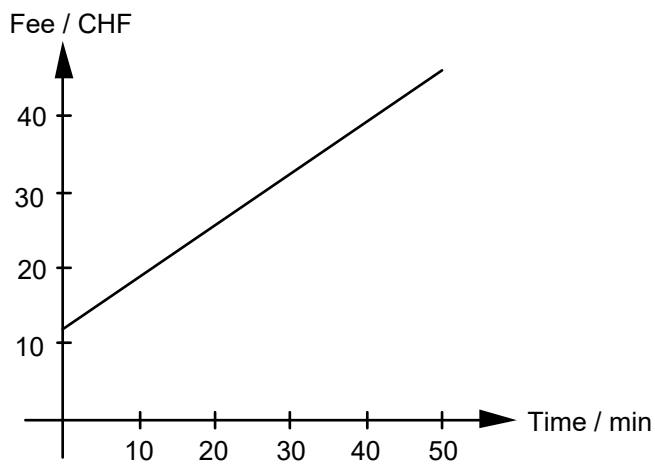
Slope $a = \frac{\Delta y}{\Delta x} = \frac{2}{1} = 2$
Intercept $b = 1$

2. Graphs of some linear functions



3. Satellite phone tariff

Monthly fee: 12 CHF basic fee plus 0.70 CHF per minute



4. Simple interest

Initial balance = 2000 CHF, interest rate = 2.5%

