

Algebraic Operations

$\mathbf{A} \subseteq \mathbb{R}$, subset of real numbers

$\mathbf{f}, \mathbf{g}: \mathbf{A} \rightarrow \mathbb{R}$, two numerical functions

- Sum of functions $\mathbf{h} = \mathbf{f} + \mathbf{g}$, $\mathbf{h}: \mathbf{A} \rightarrow \mathbb{R}$, $\mathbf{h}(\mathbf{x}) = \mathbf{f}(\mathbf{x}) + \mathbf{g}(\mathbf{x})$
- Difference of functions $\mathbf{h} = \mathbf{f} - \mathbf{g}$, $\mathbf{h}: \mathbf{A} \rightarrow \mathbb{R}$, $\mathbf{h}(\mathbf{x}) = \mathbf{f}(\mathbf{x}) - \mathbf{g}(\mathbf{x})$
- Product of functions $\mathbf{h} = \mathbf{f}\mathbf{g} = \mathbf{f} \cdot \mathbf{g}$, $\mathbf{h}: \mathbf{A} \rightarrow \mathbb{R}$, $\mathbf{h}(\mathbf{x}) = \mathbf{f}(\mathbf{x}) \cdot \mathbf{g}(\mathbf{x})$
- Ratio of functions $\mathbf{h} = \mathbf{f}/\mathbf{g}$, $\mathbf{h}: \mathbf{B} \rightarrow \mathbb{R}$, $\mathbf{h}(\mathbf{x}) = \mathbf{f}(\mathbf{x})/\mathbf{g}(\mathbf{x})$ Defined only on $\mathbf{B} = \mathbf{A} \setminus \{\mathbf{x} \mid \mathbf{g}(\mathbf{x}) = 0\}$

Scaling and Shifting

$$\mathbf{f}(\mathbf{t}) =$$

Completing the square

$h($

$$\mathbf{t} \rightarrow (\mathbf{t} -$$

$$\mathbf{t} \rightarrow -5(\mathbf{t} - 1)^2$$

