

# Formulae

## (i) Addition of two real functions

Let  $f : X \rightarrow \mathbf{R}$  and  $g : X \rightarrow \mathbf{R}$  be any two real functions, where  $X \subseteq \mathbf{R}$ .

Then we define  $(f + g) : X \rightarrow \mathbf{R}$  by  $(f + g)(x) = f(x) + g(x)$ , for all  $x \in X$ .

## (ii) Subtraction of a real function from another

Let  $f : X \rightarrow \mathbf{R}$  and  $g : X \rightarrow \mathbf{R}$  be any two real functions, where  $X \subseteq \mathbf{R}$ .

Then, we define  $(f - g) : X \rightarrow \mathbf{R}$  by  $(f - g)(x) = f(x) - g(x)$ , for all  $x \in X$ .

## (iii) Multiplication by a Scalar

Let  $f : X \rightarrow \mathbf{R}$  be a real function and  $\alpha$  be any scalar belonging to  $\mathbf{R}$ . Then the product  $\alpha f$  is function from  $X$  to  $\mathbf{R}$  defined by  $(\alpha f)(x) = \alpha f(x)$ ,  $x \in X$ .

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## (iv) *Multiplication of two real functions*

Let  $f : X \rightarrow \mathbf{R}$  and  $g : X \rightarrow \mathbf{R}$  be any two real functions, where  $X \subseteq \mathbf{R}$ . Then product of these two functions i.e.  $f g : X \rightarrow \mathbf{R}$  is defined by  $(f g)(x) = f(x) g(x) \forall x \in X$ .

## (v) *Quotient of two real function*

Let  $f$  and  $g$  be two real functions defined from  $X \rightarrow \mathbf{R}$ . The quotient of  $f$  by  $g$  denoted by  $\frac{f}{g}$  is a function defined from  $X \rightarrow \mathbf{R}$  as

$$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}, \text{ provided } g(x) \neq 0, x \in X.$$

Source: NCERT