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RELATIONS AND FUNCTIONS

Class 11 Mathematics • Complete Formula Sheet

Sr.	Concept	Formulas	Other Information
RELATIONS			
1	Definition	$R \subseteq A \times B$	A, B are non-empty sets.
2	Domain & Range	$D(R) = \{x : (x,y) \in R\}$ $R(R) = \{y : (x,y) \in R\}$	No. of relations $= 2^{mn}$.
3	Types of Relations	Reflexive: $(a,a) \in R$ Symmetric: $(a,b) \in R \Rightarrow (b,a) \in R$ Transitive: $(a,b),(b,c) \in R \Rightarrow (a,c) \in R$	Equivalence: All three simultaneously.
FUNCTIONS			
4	Definition	$f : A \to B$	Every $a \in A$ has unique image in B.
5	Real Functions	Modulus: $f(x) = |x|$ Signum: $f(x) = |x|/x$ Greatest Int: $f(x) = [x]$	Range of Signum: $\{-1, 0, 1\}$. Range of $[x]$: $\mathbb{Z}$.
6	Algebra of Funcs	$(f \pm g)(x) = f(x) \pm g(x)$ $(fg)(x) = f(x)g(x)$ $(f/g)(x) = f(x)/g(x)$	Domain is $D_1 \cap D_2$. For f/g, $g(x) \neq 0$.
7	Scalar Multiple	$(cf)(x) = c \cdot f(x)$	c is a real scalar.

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