Important Questions for Class 11 Maths Chapter 2: Important Questions for Class 11 Maths Chapter 2 focus on the chapter Relations and Functions providing important questions that help strengthen students' understanding of foundational concepts.

These questions cover important topics such as the definition and types of relations, types of functions, domain and range and methods to represent functions. Practicing these questions helps students clarify distinctions between different relations and functions, understand mappings and grasp the applications of domain and range. With expert-created questions, students gain a better command over the chapter making it easier to tackle exam-related problems confidently.

Important Questions for Class 11 Maths Chapter 2 Overview

Important Questions for Class 11 Maths Chapter 2 have been prepared by the subject experts at Physics Wallah to help students build a solid understanding of Relations and Functions.

By practicing these questions, students can enhance their problem-solving skills, gain clarity on complex concepts, and prepare thoroughly for their exams. These expertly created questions provide an excellent resource for students aiming to build a strong foundation in the chapter.

Important Questions for Class 11 Maths Chapter 2 PDF

The PDF link for Important Questions for Class 11 Maths Chapter 2 is available below providing easy access to a created set of questions on Relations and Functions.

This PDF is a convenient way for students to practice important concepts and solve problems anytime, helping them to thoroughly prepare for exams. Downloading this PDF allows students to work offline and focus on key areas covered in Chapter 2 ensuring they gain confidence and improve their understanding of the chapter’s fundamentals.

Important Questions for Class 11 Maths Chapter 2 PDF

Important Questions Class 11 Maths Chapter 2 Relations and Functions

Here is the Important Questions Class 11 Maths Chapter 2 Relations and Functions-

Q.1: Write the range of a Signum function.

Solution:

The real function f: R → R defined by

$$f(x)=\begin{cases} 1, & if\ x>0 \\ 0, & if\ x=0 \\ -1, & if\ x<0 \end{cases}$$

is called the signum function. Domain of f = R, Range of f = {1, 0, – 1}

Q.2: The Cartesian product A × A has 9 elements among which are found (–1, 0) and (0,1). Find the set A and the remaining elements of A × A.

Solution:

We know that,

If n(A) = p and n(B) = q, then n(A × B) = pq

From the given,

n(A × A) = 9

n(A) × n(A) = 9,

n(A) = 3 ……(i)

The ordered pairs (-1, 0) and (0, 1) are two of the nine elements of A × A.

Therefore, A × A = {(a, a) : a ∈ A}

Hence, -1, 0, 1 are the elemets of A. …..(ii)

From (i) and (ii),

A = {-1, 0, 1}

The remaining elements of set A × A are (-1, -1), (-1, 1), (0, -1), (0, 0), (1, -1), (1, 0) and (1, 1).

Q.3: Express the function f: A—R. f(x) = x^2 – 1. where A = { -4, 0, 1, 4) as a set of ordered pairs.

Solution:

Given,

A = {-4, 0, 1, 4}

$f(x) = x^2 – 1$

$f(-4) = (-4)^2 – 1 = 16 – 1=15$

$f(0) = (0)^2 – 1 = -1$

$f(1) = (1)^2 – 1 = 0$

$f(4) = (4)^2 – 1 = 16 – 1 =15$

Therefore, the set of ordered pairs = {(-4, 15), (0, -1), (1, 0), (4, 15)}

Q.4: Assume that A = {1, 2, 3,…,14}. Define a relation R from A to A by R = {(x, y) : 3x – y = 0, such that x, y ∈ A}. Determine and write down its range, domain, and codomain.

Solution:

It is given that the relation R from A to A is given by R = {(x, y): 3x – y = 0, where x, y ∈ A}.

It means that R = {(x, y) : 3x = y, where x, y ∈ A}

Hence, R = {(1, 3), (2, 6), (3, 9), (4, 12)}

We know that the domain of R is defined as the set of all first elements of the ordered pairs in the given relation.

Hence, the domain of R = {1, 2, 3, 4}

To determine the codomain, we know that the entire set A is the codomain of the relation R.

Therefore, the codomain of R = A = {1, 2, 3,…,14}

As it is known that, the range of R is defined as the set of all second elements in the relation ordered pair.

Hence, the Range of R is given by = {3, 6, 9, 12}

Q.5: Let $f(x) = x^2$ and g(x) = 2x + 1 be two real functions. Find

(f + g) (x), (f –g) (x), (fg) (x), (f/g) (x)

Solution:

Given,

$f(x) = x^2$ and g(x) = 2x + 1

$(f + g)(x) = x^2 + 2x + 1$

$(f - g)(x) = x^2 - (2x + 1) = x^2 - 2x - 1$

$(fg)(x) = x^2(2x + 1) = 2x^3 + x^2$

$(f/g)(x) = x^2/(2x + 1),\ x \neq -1/2$

Q.6: Redefine the function: f(x) = |x – 1| – |x + 6|. Write its domain also.

Solution:

Given function is f(x) = |x – 1| – |x + 6|

Redefine of the function is:

$$f(x) = \begin{cases} -x + 1 + x + 6, & x \leq -6 \\ -x + 1 - x - 6, & -6 \leq x < 1 \\ x - 1 - x - 6, & x \geq 1 \end{cases}$$

$$= \begin{cases} 7, & x \leq -6 \\ -2x - 5, & -6 \leq x < 1 \\ -7, & x \geq 1 \end{cases}$$

The domain of this function is R.

Q.7: The function f is defined by

$$f(x) = \begin{cases} 1 - x, & x < 0 \\ 1, & x = 0 \\ x + 1, & x > 0 \end{cases}$$

Draw the graph of f(x).

Solution:

f(x) = 1 – x, x < 0, this gives

f(– 4) = 1 – (– 4)= 5;

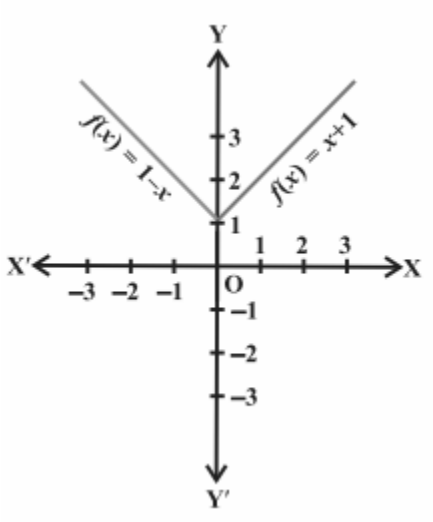
f(– 3) =1 – (– 3) = 4,

f(– 2) = 1 – (– 2)= 3

f(–1) = 1 – (–1) = 2; etc,

Also, f(1) = 2, f (2) = 3, f (3) = 4, f(4) = 5 and so on for f(x) = x + 1, x > 0.

Thus, the graph of f is as shown in the below figure.



Q.8: Find the domain and range of the real function f(x) = x/1+x^2.

Solution:

Given real function is f(x) = x/1+x^2.

1 + x^2 ≠ 0

x^2 ≠ -1

Domain : x ∈ R

Let f(x) = y

y = x/1+x^2

⇒ x = y(1 + x^2)

⇒ yx^2 – x + y = 0

This is quadratic equation with real roots.

$(-1)^2$ – 4(y)(y) ≥ 0

1 – $4y^2$ ≥ 0

⇒ $4y^2$ ≤ 1

$\Rightarrow y^2 \leq 1/4$

$\Rightarrow -½ \leq y \leq ½$

$\Rightarrow -1/2 \leq f(x) \leq ½$

Range = [-½, ½]

Benefits of Solving Important Questions for Class 11 Maths Chapter 2

Here are some key benefits of solving important questions for Class 11 Maths Chapter 2 Relations and Functions :

Strengthens Conceptual Understanding: These questions target core concepts, helping students build a strong foundation in understanding relations and functions, which are important for further math topics.

Improves Problem-Solving Skills: By working through varied problems students develop critical problem-solving strategies and techniques specific to relations and functions.

Focus on Key Topics: These questions help students identify and concentrate on the most critical topics within the chapter maximizing their study efficiency.

Enhances Time Management: Regular practice enables students to improve their speed and accuracy, which is essential for time-bound exams.

Self-Assessment: Solving important questions allows students to evaluate their understanding and identify areas that need more practice or clarification.