

Class 12 Maths Chapter 1 Relations and Functions MCQs For Practice

1. Let T be the set of all triangles in a plane, and let R be a relation defined on T as aRb if a is congruent to $b \forall a, b \in T$. Then R is

- (a) reflexive but not transitive
- (b) transitive but not symmetric
- (c) equivalence relation
- (d) anti-symmetric relation

2. If set A contains 5 elements and the set B contains 6 elements, then the number of one-one and onto mappings from A to B is

- (a) 720
- (b) 120
- (c) 0
- (d) only one

3. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be defined as $f(x) = 3x$. Then $f(x)$ is

- (a) one-one and onto
- (b) many-one and onto
- (c) one-one but not onto
- (d) neither one-one nor onto

4. Which of the following functions from \mathbb{Z} into \mathbb{Z} is a bijection?

- (a) $f(x) = x^3$
- (b) $f(x) = x + 2$
- (c) $f(x) = 2x + 1$
- (d) $f(x) = x^2 + 1$

5. Given function $f: \mathbb{R} - \{4/3\} \rightarrow \mathbb{R} - \{4/3\}$ defined by $f(x) = (4x+3)/(3x+4)$ is a bijection. Then, f^{-1} is

- (a) $f^{-1}(x) = (4x+3)/(4-3x)$
- (b) $f^{-1}(x) = (4x-3)/(3-4x)$
- (c) $f^{-1}(x) = (3x-4)/(4-3x)$
- (d) $f^{-1}(x) = (4x-3)/(4-3x)$

6. The domain and range of the real function, defined by $f(x) = 1/(1-x^2)$ is

- (a) $\text{dom}(f) = \mathbb{R} - [-1, 1]$ and $\text{range}(f) = [1, \infty)$
- (b) $\text{dom}(f) = \mathbb{R} - \{-1, 1\}$ and $\text{range}(f) = [1, \infty)$
- (c) $\text{dom}(f) = \mathbb{R} - (-1, 1)$ and $\text{range}(f) = (1, \infty)$
- (d) $\text{dom}(f) = \mathbb{R} - [-1, 1]$ and $\text{range}(f) = [-1, 1]$

7. Let R be the relation in the set $\{1, 2, 3, 4\}$ given by $R = \{(1, 2), (2, 2), (1, 1), (4, 4), (1, 3), (3, 3), (3, 2)\}$. Then R is:

- (a) reflexive and symmetric but not transitive
- (b) reflexive and transitive but not symmetric
- (c) symmetric and transitive but not reflexive
- (d) equivalence relation

8. Let $A = \{1, 2, 3, \dots, n\}$ and $B = \{a, b\}$. Then the number of surjections from A into B is:

- (a) ${}^n P_2$
- (b) $2^n - 1$
- (c) $2^n - 2$
- (d) n

9. Let $f: \mathbf{R} \rightarrow \mathbf{R}$ be defined by $f(x) = 1/x$, for every x in \mathbf{R} . Then f is:

- (a) one-one
- (b) onto
- (c) bijection
- (d) f is not defined

10. Let f be the greatest integer function and g be an absolute value function, then the value of $(f \circ g)(-5/2) + (g \circ f)(-5/2)$ is

- (a) 0
- (b) 2
- (c) 4
- (d) 6

***** ANSWER KEYS*****

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|-----------|-----------|-----------|-----------|------------|
| Q.1 - (c) | Q.2 - (c) | Q.3 - (a) | Q.4 - (b) | Q.5 - (d) |
| Q.6 - (b) | Q.7 - (b) | Q.8 - (c) | Q.9 - (d) | Q.10 - (c) |