



Behind MVR Shopping Mall, Old Gajuwaka

DEFENCE BRIGADE

**NDA, NAVY SSR & AA, AIRFORCE GROUP X & Y, ARMY,
INDIAN COAST GUARD, PARAMILITARY FORCES**

FUNCTIONS

PRACTICE SET

- The number of relations from $A = \{1,2,3\}$ to $B = \{4,8,10\}$ is
a) 4^3 b) 2^7 c) 2^{12} d) None
- $n(A) = 3, n(B) = 2$ then the number of surjections from A to B
a) 3 b) 6 c) 8 d) 9
- $f: R \rightarrow R$ defined by $f(x) = \cos(2x+3)$ is
a) injective only b) surjective only c) bijective d) neither injective nor surjective
- If $f(x) = 2x+1$ and $g(x) = x^2+1$ then $g(f(f(2))) =$
a) 112 b) 122 c) 12 d) 124
- If $f: R \rightarrow R$ is defined by then $f(x) = \frac{2x+1}{3}$ then $f^{-1}(x) =$
a) $\frac{3x-1}{2}$ b) $\frac{x-3}{2}$ c) $\frac{2x-1}{3}$ d) $\frac{x-4}{3}$
- If $f(x) = \frac{5x+6}{7x+9}$ then $f^{-1}(x) =$
a) $\frac{x+6}{7x+9}$ b) $\frac{7x+9}{5x+6}$ c) $\frac{9x-6}{-7x+9}$ d) $\frac{9x-6}{-7x+5}$
- $f: R \rightarrow R$ is a function defined by
 $f(x) = 10x - 7$. If $g = f^{-1}(x)$ then $g(x) =$
a) $\frac{1}{10x-7}$ b) $\frac{1}{10x+7}$ c) $\frac{x+7}{10}$ d) $\frac{x-7}{10}$
- If $f: R^+ \rightarrow R$ such that
 $f(x) = \log_5 x$ then $f^{-1}(x) =$
a) $\log_x 10$ b) 5^x c) 3^{-x} d) $3^{1/x}$
- If $f(x) = x^4 + 5x^2 + 1$, then $f(1/x) =$
a) $\frac{f(x)}{x^4}$ b) $\frac{f(x)}{x^3}$ c) $x^2 f(x)$ d) $x^4 f(x)$
- If $f(x) = x^2, g(x) = x^2 - 5x + 6$ then $g(2) + g(3) + g(0) - f(0) - f(1) - f(-2)$
a) 2 b) $6/5$ c) $5/6$ d) 1

11. The domain of $f(x) = \sqrt{25 - x^2}$ is
- a) $(-\infty, -5)$ b) $(5, \infty)$ c) $(-5, 5)$ d) $(-\infty, \infty)$
12. What is the range of $f(x) = \cos 2x$
- (a) $[2, 4]$ (b) $[-1, 1]$ (c) $[-1\sqrt{2}, \sqrt{2}]$ (d) $(-\sqrt{2}, 2)$
13. Consider the function $f: \mathbb{R} \rightarrow \{0, 1\}$ such that:
 $f(x) = 1$, if x is rational
 $f(x) = 0$, if x is irrational
 Which one of the following is correct?
- (a) The function is one-one into. (b) The function is many-one into.
 (c) The function is one-one onto. (d) The function is many-one onto
14. The function $f(x) = e^x$, $x \in \mathbb{R}$ is
- (a) onto but not one-one (b) one-one onto
 (c) one-one but not onto (d) neither one-one nor onto
15. The function $f(x) = \frac{x}{x^2 + 1}$ from \mathbb{R} to \mathbb{R} is
- (a) one-one as well as onto (b) onto but not one-one
 (c) neither one-one nor onto (d) one-one but not onto
16. A mapping $f: \mathbb{R} \rightarrow \mathbb{R}$ which is defined as $f(x) = \cos x$; $x \in \mathbb{R}$ is
- (a) one-one only (b) onto only (c) one-one onto (d) neither one-one nor onto
17. Which one of the following function $f: \mathbb{R} \rightarrow \mathbb{R}$ is injective?
- (a) $f(x) = |x|$, $\forall x \in \mathbb{R}$ (b) $f(x) = x^2$, $\forall x \in \mathbb{R}$ (c) $f(x) = 11$, $\forall x \in \mathbb{R}$ (d) $f(x) = -x$, $\forall x \in \mathbb{R}$
18. Let $g: \mathbb{R} \rightarrow \mathbb{R}$ be a function such that, $g(x) = 2x + 5$. Then, what is $g^{-1}(x)$ equal to?
- (a) $\frac{x-5}{2}$ (b) $2x-5$ (c) $x - \frac{5}{2}$ (d) $\frac{x}{2} + \frac{5}{2}$
19. The function $f: \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = (x^2+1)^{35}$ for all $x \in \mathbb{R}$ is
- (a) one-one but not onto (b) onto but not one-one (c) neither one-one nor onto (d) both one-one and onto
20. **Assertion (A)** $Y = 2x+3$ is one-to-one real function.
Reason (R) $x_1 \neq x_2 \Rightarrow y_1 \neq y_2$, $y_1 = 2x_1 + 3$, $y_2 = 2x_2 + 3$, for any two real x_1 and x_2
- (a) A and R are both correct, also R is the correct explanation of A.
 (b) A and R are both correct, but R is not the correct explanation of A.
 (c) A is correct but R is wrong.
 (d) A is wrong but R is correct.