

1. Which of the following function is invertible

[AMU 2001]

- (a) $f(x) = 2^x$ (b) $f(x) = x^3 - x$
 (c) $f(x) = x^2$ (d) None of these

2. Which of the following functions is inverse of itself

- (a) $f(x) = \frac{1-x}{1+x}$ (b) $f(x) = 5^{\log x}$
 (c) $f(x) = 2^{x(x-1)}$ (d) None of these

3. The inverse of the function $f(x) = \frac{e^x - e^{-x}}{e^x + e^{-x}} + 2$ is given by

[Kurukshetra CEE 1996]

- (a) $\log_e \left(\frac{x-2}{x-1} \right)^{1/2}$ (b) $\log_e \left(\frac{x-1}{3-x} \right)^{1/2}$
 (c) $\log_e \left(\frac{x}{2-x} \right)^{1/2}$ (d) $\log_e \left(\frac{x-1}{x+1} \right)^{-2}$

4. If the function $f : [1, \infty) \rightarrow [1, \infty)$ is defined by $f(x) = 2^{x(x-1)}$, then $f^{-1}(x)$ is

[IIT 1999]

- (a) $\left(\frac{1}{2} \right)^{x(x-1)}$ (b) $\frac{1}{2} (1 + \sqrt{1 + 4 \log_2 x})$
 (c) $\frac{1}{2} (1 - \sqrt{1 + 4 \log_2 x})$ (d) Not defined

5. If $f(x) = 3x - 5$, then $f^{-1}(x)$

[IIT 1998]

- (a) Is given by $\frac{1}{3x-5}$
 (b) Is given by $\frac{x+5}{3}$
 (c) Does not exist because f is not one-one
 (d) Does not exist because f is not onto

6. If $f : \mathbb{R} \rightarrow \mathbb{R}$ is defined by $f(x) = 3x - 4$, then $f^{-1} : \mathbb{R} \rightarrow \mathbb{R}$ is

[SCRA 1996]

- (a) $4 - 3x$ (b) $\frac{x+4}{3}$
 (c) $\frac{1}{3x-4}$ (d) $\frac{3}{x+4}$

7. If $f(x) = \frac{x}{1+x}$, then $f^{-1}(x)$ is equal to

[AMU 1999]

- (a) $\frac{(1+x)}{x}$ (b) $\frac{1}{(1+x)}$
 (c) $\frac{(1+x)}{(1-x)}$ (d) $\frac{x}{(1-x)}$

8. Which of the following function is invertible function

[AMU 2000]

- (a) $f(x) = \frac{1}{x-1}$ (b) $f(x) = x^2$ for all x
 (c) $f(x) = x^2, x \geq 0$ (d) $f(x) = x^2, x \leq 0$

9. Let $f(\theta) = \sin \theta (\sin \theta + \sin 3\theta)$, then $f(\theta)$

[IIT Screening 2000]

- (a) ≥ 0 only when $\theta \geq 0$ (b) ≤ 0 for all real θ
 (c) ≥ 0 for all real θ (d) ≤ 0 only when $\theta \leq 0$

10. The inverse of the function $\frac{10^x - 10^{-x}}{10^x + 10^{-x}}$ is [RPET 2001]

- (a) $\frac{1}{2} \log_{10} \left(\frac{1+x}{1-x} \right)$ (b) $\frac{1}{2} \log_{10} \left(\frac{1-x}{1+x} \right)$
 (c) $\frac{1}{4} \log_{10} \left(\frac{2x}{2-x} \right)$ (d) None of these

11. Inverse of the function $y = 2x - 3$ is [UPSEAT 2002]

- (a) $\frac{x+3}{2}$ (b) $\frac{x-3}{2}$
 (c) $\frac{1}{2x-3}$ (d) None of these

12. Let the function f be defined by $f(x) = \frac{2x+1}{1-3x}$, then $f^{-1}(x)$ is [Kerala (Engg.) 2002]

- (a) $\frac{x-1}{3x+2}$ (b) $\frac{3x+2}{x-1}$
 (c) $\frac{x+1}{3x-2}$ (d) $\frac{2x+1}{1-3x}$

13. If $f(x) = x^2 + 1$, then $f^{-1}(17)$ and $f^{-1}(5)$ will be [UPSEAT 2003]

- (a) 4, 1 (b) 4, 0
 (c) 3, 2 (d) None of these

14. Let $f(x) = \sin x + \cos x$, $g(x) = x^2 - 1$. Thus $g(f(x))$ is invertible for $x \in$ [IIT Screening 2004]

- (a) $\left[-\frac{\pi}{2}, 0 \right]$ (b) $\left[-\frac{\pi}{2}, \pi \right]$
 (c) $\left[\frac{-\pi}{4}, \frac{\pi}{4} \right]$ (d) $\left[0, \frac{\pi}{2} \right]$

15. If $f(x) = \frac{2x-1}{x+5}$ ($x \neq -5$), then $f^{-1}(x)$ is equal to [MP PET 2004]

- (a) $\frac{x+5}{2x-1}$, $x \neq \frac{1}{2}$ (b) $\frac{5x+1}{2-x}$, $x \neq 2$
 (c) $\frac{5x-1}{2-x}$, $x \neq 2$ (d) $\frac{x-5}{2x+1}$, $x \neq \frac{1}{2}$

16. If $f(x) = \frac{\alpha x}{x+1}$, $x \neq -1$, for what value of α is $f(f(x)) = x$ [Kerala (Engg.) 2005]

- (a) $\sqrt{2}$ (b) $-\sqrt{2}$
 (c) 1 (d) 2

17. Let $f: (2,3) \rightarrow (0,1)$ be defined by $f(x) = x - [x]$ then $f^{-1}(x)$ equals [Orissa JEE 2005]

- (a) $x-2$ (b) $x+1$
 (c) $x-1$ (d) $x+2$

Q.	1	2	3	4	5	6	7	8	9
A.	A	a	b	b	b	b	d	c,d	b
Q.	10	11	12	13	14	15	16	17	
A.	a	a	a	c	c	b	c	d	