

Functions

- If $f(x) = \cos(\log x)$, then $f(x)f(y) - \frac{1}{2}[f(x/y) + f(xy)] =$
 - 1
 - $\frac{1}{2}$
 - 2
 - None of these
- If $f(x) = \frac{1-x}{1+x}$, then $f[\cos 2\theta] =$
 - $\tan 2\theta$
 - $\sec 2\theta$
 - $\cos 2\theta$
 - $\cot 2\theta$
- If $f(x) = \sin \log x$, then the value of $f(xy) + f\left(\frac{x}{y}\right) - 2f(x) \cdot \cos \log y$ is equal to **[Orissa JEE 2004]**
 - 1
 - 0
 - 1
 - $\sin \log x \cdot \cos \log y$
- The value of b and c for which the identity $f(x+1) - f(x) = 8x + 3$ is satisfied, where $f(x) = bx^2 + cx + d$, are **[Roorkee 1992]**
 - $b = 2, c = 1$
 - $b = 4, c = -1$
 - $b = -1, c = 4$
 - $b = -1, c = 1$
- Given the function $f(x) = \frac{a^x + a^{-x}}{2}$, ($a > 2$). Then $f(x+y) + f(x-y) =$
 - $2f(x) \cdot f(y)$
 - $f(x) \cdot f(y)$
 - $\frac{f(x)}{f(y)}$
 - None of these
- If $f(x) = \frac{x}{x-1}$, then $\frac{f(a)}{f(a+1)} =$ **[MP PET 1996]**
 - $f(-a)$
 - $f\left(\frac{1}{a}\right)$
 - $f(a^2)$
 - $f\left(\frac{-a}{a-1}\right)$
- If $f(x) = \cos(\log x)$, then $f(x^2)f(y^2) - \frac{1}{2}\left[f\left(\frac{x^2}{2}\right) + f\left(\frac{x^2}{y^2}\right)\right]$ has the value **[MNR 1992]**
 - 2
 - 1
 - $1/2$
 - None of these
- The equivalent function of $\log x^2$ is **[MP PET 1997]**
 - $2 \log x$
 - $2 \log |x|$
 - $|\log x^2|$
 - $(\log x)^2$
- If $f(x) = \log\left[\frac{1+x}{1-x}\right]$, then $f\left[\frac{2x}{1+x^2}\right]$ is equal to **[MP PET 1999; RPET 1999; UPSEAT 2003]**
 - $[f(x)]^2$
 - $[f(x)]^3$
 - $2f(x)$
 - $3f(x)$
- If $\phi(x) = a^x$, then $\{\phi(p)\}^3$ is equal to **[MP PET 1999]**
 - $\phi(3p)$
 - $3\phi(p)$
 - $6\phi(p)$
 - $2\phi(p)$

11. If $f(x) = \frac{x-3}{x+1}$, then $f[f\{f(x)\}]$ equals [RPET 1996]
 (a) x (b) $-x$
 (c) $\frac{x}{2}$ (d) $-\frac{1}{x}$
12. If $f(x) = \cos(\log x)$, then the value of $f(x) \cdot f(4) - \frac{1}{2} \left[f\left(\frac{x}{4}\right) + f(4x) \right]$ [Kurukshetra CEE 1998]
 (a) 1 (b) -1
 (c) 0 (d) ± 1
13. If $f(x) = \frac{x-|x|}{|x|}$, then $f(-1) =$ [SCRA 1996]
 (a) 1 (b) -2
 (c) 0 (d) +2
14. If $f(x) = 4x^3 + 3x^2 + 3x + 4$, then $x^3 f\left(\frac{1}{x}\right)$ is [SCRA 1996]
 (a) $f(-x)$ (b) $\frac{1}{f(x)}$
 (c) $\left(f\left(\frac{1}{x}\right)\right)^2$ (d) $f(x)$
15. Let $f: R \rightarrow R$ be defined by $f(x) = 2x + |x|$, then $f(2x) + f(-x) - f(x) =$ [EAMCET 2000]
 (a) $2x$ (b) $2|x|$
 (c) $-2x$ (d) $-2|x|$
16. If $f(x+ay, x-ay) = axy$, then $f(x, y)$ is equal to [AMU 2001]
 (a) xy (b) $x^2 - a^2y^2$
 (c) $\frac{x^2 - y^2}{4}$ (d) $\frac{x^2 - y^2}{a^2}$
17. If $f(x) = \cos[\pi^2]x + \cos[-\pi^2]x$, then [Orissa JEE 2002]
 (a) $f\left(\frac{\pi}{4}\right) = 2$ (b) $f(-\pi) = 2$
 (c) $f(\pi) = 1$ (d) $f\left(\frac{\pi}{2}\right) = -1$
18. If $f(x) = \frac{1}{\sqrt{x+2\sqrt{2x-4}}} + \frac{1}{\sqrt{x-2\sqrt{2x-4}}}$ for $x > 2$, then $f(11) =$ [EAMCET 2003]
 (a) $\frac{7}{6}$ (b) $\frac{5}{6}$
 (c) $\frac{6}{7}$ (d) $\frac{5}{7}$
19. If $e^{f(x)} = \frac{10+x}{10-x}$, $x \in (-10, 10)$ and $f(x) = kf\left(\frac{200x}{100+x^2}\right)$, then $k =$ [EAMCET 2003]
 (a) 0.5 (b) 0.6
 (c) 0.7 (d) 0.8
20. If $f(x) = 2 \sin x$, $g(x) = \cos^2 x$, then $(f+g)\left(\frac{\pi}{3}\right) =$
 (a) 1 (b) $\frac{2\sqrt{3}+1}{4}$
 (c) $\sqrt{3} + \frac{1}{4}$ (d) None of these
21. The graph of the function $y = f(x)$ is symmetrical about the line $x = 2$, then [AIEEE 2004]
 (a) $f(x) = -f(-x)$ (b) $f(2+x) = f(2-x)$
 (c) $f(x) = f(-x)$ (d) $f(x+2) = f(x-2)$