

DPP 1 (function)

1. If $f(x) = \cos(\log x)$, then $f(x)f(y) - \frac{1}{2}[f(x/y) + f(xy)] =$
 - (a) -1
 - (b) $\frac{1}{2}$
 - (c) -2
 - (d) None of these
2. If $f(x) = \frac{1-x}{1+x}$, then $f[f(\cos 2\theta)] =$
 - (a) $\tan 2\theta$
 - (b) $\sec 2\theta$
 - (c) $\cos 2\theta$
 - (d) $\cot 2\theta$
3. 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
 - (a) 1
 - (b) 0
 - (c) -1
 - (d) $\sin \log x \cdot \cos \log y$
5. 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
 - (a) $b = 2, c = 1$
 - (b) $b = 4, c = -1$
 - (c) $b = -1, c = 4$
 - (d) $b = -1, c = 1$
6. Given the function $f(x) = \frac{a^x + a^{-x}}{2}$, ($a > 2$). Then $f(x+y) + f(x-y) =$
 - (a) $2f(x) \cdot f(y)$
 - (b) $f(x) \cdot f(y)$
 - (c) $\frac{f(x)}{f(y)}$
 - (d) None of these
7. If $f(x) = \frac{x}{x-1}$, then $\frac{f(a)}{f(a+1)} =$
 - (a) $f(-a)$
 - (b) $f\left(\frac{1}{a}\right)$
 - (c) $f(a^2)$
 - (d) $f\left(\frac{-a}{a-1}\right)$
8. 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
 - (a) -2
 - (b) -1
 - (c) $1/2$
 - (d) None of these
9. The equivalent function of $\log x^2$ is
 - (a) $2 \log x$
 - (b) $2 \log |x|$
 - (c) $|\log x^2|$
 - (d) $(\log x)^2$
10. If $f(x) = \log \left[\frac{1+x}{1-x} \right]$, then $f\left[\frac{2x}{1+x^2} \right]$ is equal to
 - (a) $[f(x)]^2$
 - (b) $[f(x)]^3$
 - (c) $2f(x)$
 - (d) $3f(x)$
11. If $\phi(x) = a^x$, then $\{\phi(p)\}^3$ is equal to
 - (a) $\phi(3p)$
 - (b) $3\phi(p)$
 - (c) $6\phi(p)$
 - (d) $2\phi(p)$
12. If $f(x) = \frac{x-3}{x+1}$, then $f[f\{f(x)\}]$ equals
 - (a) x
 - (b) $-x$
 - (c) $\frac{x}{2}$
 - (d) $-\frac{1}{x}$

13. If $f(x) = \cos(\log x)$, then the value of $f(x)f(4) - \frac{1}{2} \left[f\left(\frac{x}{4}\right) + f(4x) \right]$ (a) 1

- (b) -1
(c) 0 (d) ± 1

14. If $f(x) = \frac{x - |x|}{|x|}$, then $f(-1) =$ (a) 1 (b) -2

- (c) 0 (d) +2

15. If $f(x) = 4x^3 + 3x^2 + 3x + 4$, then $x^3 f\left(\frac{1}{x}\right)$ is

- (a) $f(-x)$ (b) $\frac{1}{f(x)}$

- (c) $\left(f\left(\frac{1}{x}\right)\right)^2$ (d) $f(x)$

16 Domain of the function $f(x) = \sqrt{2 - 2x - x^2}$ is

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

17 Domain of the function $f(x) = \frac{x-3}{(x-1)\sqrt{x^2-4}}$ is

- (a) (1, 2) (b) $(-\infty, -2) \cup (2, \infty)$
(c) $(-\infty, -2) \cup (1, \infty)$ (d) $(-\infty, \infty) - \{1, \pm 2\}$

18 Domain of the function $\sqrt{2-x} - \frac{1}{\sqrt{9-x^2}}$ is

- (a) (-3, 1) (b) [-3, 1]
(c) (-3, 2] (d) [-3, 1)

19 Domain of the function $\frac{\sqrt{1+x} - \sqrt{1-x}}{x}$ is

- (a) (-1, 1) (b) $(-1, 1) - \{0\}$
(c) [-1, 1] (d) $[-1, 1] - \{0\}$

1	d	2	c	3	b	4	b	5	a
6	c	7	d	8	b	9	c	10	a
11	a	12	c	13	b	14	d	15	b
16	b	17	b	18	c	19	d		