

Function Question Bank

2nd Semester Diploma Engineering for All Branch

Value of Function



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- 1) If $f(x) = x^2 - 4x$, find $f(2)$
- 2) If $f(x) = \log(\sin x)$, find $f\left(\frac{\pi}{2}\right)$
- 3) If $f(x) = x^3 + x$, find $f(1) + f(2)$
- 4) If $f(x) = x^3 - 3x^2 + 5$, find $f(0) + f(3)$
- 5) If $f(x) = x^4 - 2x^2 + 7$, find $f(0) + f(2)$
- 6) If $f(x) = x^2 + 6x + 10$, find $f(2) + f(-2)$
- 7) If $f(x) = x^2 + x + 1$, find $f(x - 1)$
- 8) If $f(x) = x^3 - 3x + \sin x$, show that $f(x) + f(-x) = 0$
- 9) If $f(x) = \frac{x^2+9}{\sqrt{x-3}}$ find $f(4) + f(5)$
- 10) If $f(x) = 3x^4 + x^2 + 5 - 3 \cos x + 2 \sin^2 x$, then prove that $f(x) + f(-x) = 2f(x)$
- 11) If $f(x) = x^2 + 4$, then find $f(x + 1) - f(x - 1)$
- 12) If $f(x) = 3 \sin x - 4 \sin^3 x$, then find $f\left(\frac{\pi}{6}\right)$
- 13) If $f(x) = \sin x$ show that $f(3x) = 3[f(x)] - 4f^3(x)$
- 14) If $f(x) = \cos x$ show that $f(3x) = 4f^3(x) - 3f(x)$
- 15) If $f(x) = \frac{x^2+3x+6}{x^3+8}$, find $f(1) + f(-1)$
- 16) If $f(x) = x^3 - 5x^2 - 4x + 20$, then show that $f(0) = -2f(3)$
- 17) If $f(x) = 3x^2 - 5x + 7$, show that $f(-1) = 3f(1)$
- 18) If $f(x) = x^2 - 3x + 4$, solve $f(1 - x) = f(2x + 1)$
- 19) If $f(x) = x^2 + 3$, then find the value of x for which $f(x) = f(2x + 1)$
- 20) If $f(x) = x^2 + 4$, solve $f(x + 1) - f(x - 1) - 12 = 0$
- 21) If $f(x) = x^2 - 2x + 5$ and $t = y - 2$ find $f(t)$
- 22) If $f(x) = 16^x - \log_2 x$ find $f\left(\frac{1}{4}\right)$



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23) If $f(x) = \tan x$, then show that $f(2x) = \frac{2f(x)}{1-[f(x)]^2}$

24) If $y = f(x) = \frac{x+1}{x-1}$ show that $x = f(y)$

25) If $y = f(x) = \frac{2x-3}{3x-2}$ show that $x = f(y)$

26) If $y = f(x) = \frac{x-5}{5x-1}$ show that $f(y) = x$

27) If $f(x) = \frac{2x+5}{3x-4}$ and $t = \frac{5+4x}{3x-2}$ show that $f(t) = x$

28) If $f(x) = \frac{x+3}{4x-5}$ and $t = \frac{3+5x}{4x-1}$ show that $f(t) = x$

29) If $f(x) = \frac{x+5}{3x-4}$ and $t = \frac{5+4x}{3x-1}$ show that $f(t) = x$

30) If $f(x) = \log\left(\frac{1+x}{1-x}\right)$ then prove that $f\left(\frac{2x}{1+x^2}\right) = 2f(x)$

31) If $f(x) = \log\left(\frac{x}{x-1}\right)$ show that $f(a+1) + f(a) = \log\left(\frac{a+1}{a-1}\right)$

32) If $f(x) = \log\left(\frac{1+x}{1-x}\right)$ then show that $f(a) + f(b) = f\left(\frac{a+b}{1+ab}\right)$

33) If $f(t) = 50 \sin(100\pi t + 0.4)$, show that $f\left(\frac{2}{100} + t\right) = f(t)$

34) If $f(t) = 50 \sin(100\pi t + 0.4)$, show that $f\left(\frac{1}{50} + t\right) = f(t)$

35) If $f(t) = 50 \sin(50\pi t + 0.04)$, show that $f\left(\frac{2}{100} + t\right) = f(t)$

36) If $f(x) = \frac{1}{1-x}$ find $f\{f(x)\}$

37) If $f(x) = \frac{x-4}{4x-1}$ then show that $f\{f(x)\} = x$

38) If $f(x) = \frac{1}{1-x}$ then show that $f[f\{f(x)\}] = x$

39) If $f(x) = ax^2 + bx + 3$ and $f(1) = 4, f(2) = 11$ find 'a' and 'b'

40) Find 'a' if $f(x) = ax$ and $f(1) = 13$



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Odd and Even Function



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If $f(-x) = -f(x)$ then the given function is called **Odd** function

If $f(-x) = f(x)$ then the given function is called **Even** function

Q.1. State whether the function $f(x) = \frac{a^x + a^{-x}}{2}$ is odd or even.

Q.2. State whether the function $f(x) = \frac{e^x + e^{-x}}{2}$ is odd or even.

Q.3. Test whether the function is even or odd if $f(x) = 3x^4 - 2x^2 + \cos x$

Q.4. If $f(x) = 3x^4 + x^2 + 5 - 3 \cos x + 2 \sin^2 x$, show that $f(x)$ is Even Function

Q.5. If $f(x) = 4x^4 + 3 \cos x + x \sin x + 1$, show that $f(x)$ is Even Function

Q.6. Whether the function $f(x) = x^3 - 3x + \sin x + x \cos x$ is odd?



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