

Chapter-08 Function and Graph of Function





Identification of <u>Functions and One-One Function</u> from Graph

If y –axis or its' parallel line intersects the graph of a relation at one point only, then the relation is called as Function.

If x –axis or its' parallel line intersects the graph of a function at one point only, then the function is called as One-One Function.



Poll Question 01

Which is **One-One Function**?



Determination of Domain & Range

For, y = f(x)

For which set of real values of x, the values of y or f(x) will be real, is called as Domain of f(x).

d = k + 2 f(w) = k + 2 f(w) = k + 23 + 2 = 5

For, y = f(x)For the real values of x which belong to Dom f, the obtained values of y or f(x) is called the Range of f(x).





Chapter 08 : Function and Graph of Function













Find the Domain of $f(x) = \frac{1}{\sqrt{36-25x^2}}$ (b) $\left[-\frac{6}{5}, \frac{6}{5}\right]$ (c) $\left(-\frac{5}{6}, \frac{5}{6}\right]$ (d) $\left[-\frac{5}{6}, \frac{5}{6}\right]$ (e) $\left[-\frac{5}{6}, \frac{5}{6}\right]$ (f) $\left[-\frac{5}{6}, \frac{5}{6}\right]$ (g) $\left[-\frac{5}{6}, \frac{5}{6}\right]$ (g) $\left[-\frac{5}{6}, \frac{5}{6}\right]$ (h) $\left[-\frac{5}{6}, \frac{5}{6}\right]$

















Domain & Range of Trigonometric Function:



Domain & Range of Trigonometric Function:

Find the domain & range of f(x) = 2 + 3sinx.











Poll Question 05

If $f: R \to R$; f(x) = 2x + 1 then what will be the value of $f^{-1}(x)$? f(w) = 2x + 1, 2×, +) -2, -/ 4 (a) $\frac{x+1}{2}$ (b) $\frac{x-2}{1}$ X - | $\int \frac{x-1}{2}$ (d) None Higher Math 1st Paper Chapter 08 : Function and Graph of Function











Poll Question 06 Which one is even function? - (-22) = tan(-2) = - tank (a) f(x) = tanx $f(-x) = (-x)^2 + 2(-x)$ (b) $f(x) = x^2 + 2x$ = 22 - 2NX (f(x)) = sinx + 2f(x) = Sin(-x) + 2(d) None = -Sin (ax) + Z

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Chapter-02 : Vector



Higher Math 1st Paper — Chapter 02 : Vectot

Determination of magnitude and internal angle

Concept:

(i) For a vector $\overrightarrow{A} = \underline{x}\hat{i} + y\hat{j} + z\hat{k}$, $|\overrightarrow{A}| = \sqrt{x^2 + y^2 + z^2}$ (ii) If the angle between two vectors \overrightarrow{A} and \overrightarrow{B} is θ , then $\overrightarrow{A} \cdot \overrightarrow{B} = AB \cos \theta \Rightarrow \overrightarrow{\cos \theta} = \frac{\overrightarrow{A} \cdot \overrightarrow{B}}{AB}$; $\overrightarrow{A} \cdot \overrightarrow{B} = \overrightarrow{AB} \xrightarrow{Co \cdot Q} \overrightarrow{A} \cdot \overrightarrow{B}$



Determination of magnitude and internal angle

If $\vec{P} = 4\hat{i} - 2\hat{j} + 4\hat{k}$ and $\vec{Q} = 4\hat{i} - 2\hat{j} - \hat{k}$ then what's the angle between \vec{P} and \vec{Q} ? 722.Q 1P1/Q (050 = (4i - 2j + 4k) (4i - 2j - k) $\sqrt{4^{2}+2^{1}+4^{2}}$ $\sqrt{4^{2}+2^{1}+1^{2}}$ =- (98 ~ (05-1 ()Higher Math 1st Paper Chapter 02 : Vectot









Higher Math 1st Paper — Chapter 02 : Vectot

Related to perpendicular or parallel vector

For which value of \hat{a} , $\vec{A} = 8\hat{i} + \hat{j} - a\hat{k}$ and $\vec{B} = 4\hat{i} - 2\hat{j} + 5\hat{k}$ will be perpendicular on each other?

$$L \qquad \overrightarrow{A} \cdot \overrightarrow{B} = 0$$

$$(8\widehat{i} + \widehat{j} - \alpha\widehat{k}) \cdot (4\widehat{i} - 2\widehat{j} + 5\widehat{k}) = 0$$

$$= -\widehat{k} \cdot \widehat{k} \cdot 4 + 1 \cdot (-2) + (-\alpha) - 5 = 0$$

$$32 - 2 - 5\alpha = 0$$

$$5\alpha = 30 \qquad (\alpha - 6) = -2$$
Higher Math 1st Paper
Chapter 02 : Vector

Poll Question 08

For which value of $m, 4\hat{i} + 3\hat{j} + \hat{k} \otimes \hat{k} + \hat{k} \otimes \hat{k} + \hat{k} \otimes \hat{k} + \hat{k} \otimes \hat{k} \otimes \hat{k} + \hat{k} \otimes \hat{k} \otimes \hat{k} + \hat{k} \otimes \hat{k}$





Related to projection and component If $\vec{a} = \hat{i} + 2\hat{j} + 2\hat{k}\hat{k}\vec{b} = 4\hat{i} + 8\hat{j} - \hat{k}$ then find the component of \vec{b} on \vec{a} & projection of \vec{b} along*d*.[BUET'08-09, 09-10, 10-11,12-13,13-14; KUET' 05-06,09-10; DU'16-17] The component of B on a = b cos a. The privation of \vec{B} along $\vec{a} = b\cos\theta$ $\vec{a} \cdot \vec{B} = |\alpha|||\beta|\cos\theta$ $\vec{a} \cdot \vec{B} = \frac{(i+2j+2k)(4i+kj-k)}{(ki+2j+2k)(4i+kj-k)}$

Higher Math 1st Paper Chapter 02 : Vectot



Related to area

If $\vec{P} = 4\hat{i} - 4\hat{j} + \hat{k} \otimes \vec{Q} = 2\hat{i} - 2\hat{j} - \hat{k}$ is expressed as two adjacent sides of a parallelogram, then find it's area. [CUET'15-16, DU'17-18]



