SIR. CV. RAMAN COACHING CENTRE – IDAPPADI, SALEM – 2025

Xl- MATHS UNIT – 9- MODEL QUESTION PAPER -2025

PREPARED BY Dr.G.THIRUMOORTHI,M.Sc,B.Ed,Ph.D ,PHYSICS

thiruphysics1994@gmail.com ,8610560810,8883610465

SECTION –A (10 X 5 = 50 M)

ANSWER ANY 10 QUESTIONS

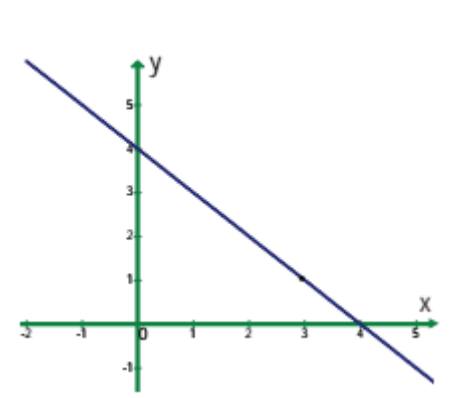
1.

$$\lim_{x\to 2}\frac{x-2}{x^2-x-2}$$

x	1.9	1.99	1.999	2.001	2.01	2.1
$f(x)$	0.344820	0.33444	0.33344	0.333222	0.33222	0.332258

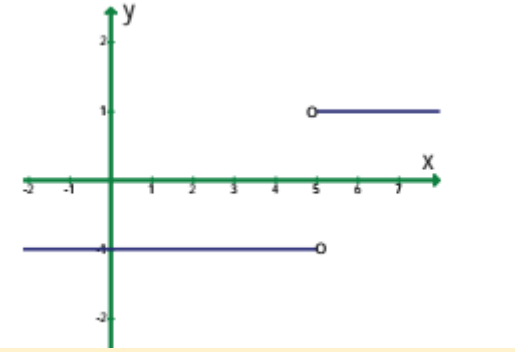
2.

$$\lim_{x\to 3}(4-x).$$



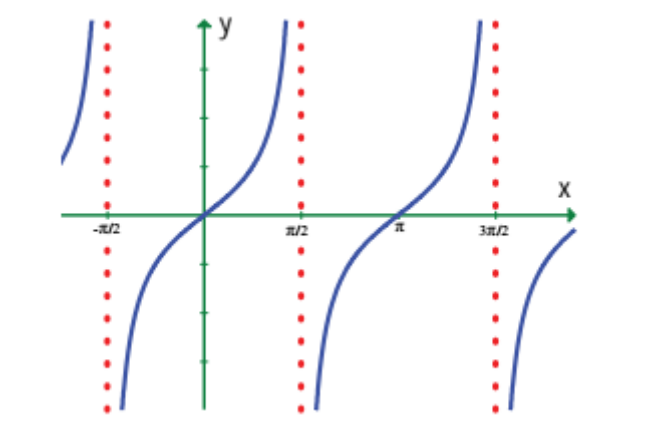
3.

$$\lim_{x\to 5}\frac{|x-5|}{x-5}$$



4.

$\lim_{x\to\frac{\pi}{2}} \tan x$



5.

$$f(x)=\begin{cases} x^2, & x\le 2 \\ 8-2x, & 2<x<4 \\ 4, & x\ge 4 \end{cases}.$$

6.

$$\lim_{x\to 2}\frac{2-\sqrt{x+2}}{\sqrt[3]{2}-\sqrt[3]{4-x}}$$

7.calculate $\lim_{x\to\infty}\frac{2x^2-2x+3}{x^2+4x+4}$.

8. The velocity in ft/sec of a falling object is modeled by $r(t)=-\sqrt{\frac{32}{k}}\frac{1-e^{-2t\sqrt{32k}}}{1+e^{-2t\sqrt{32k}}}$, where k is

a constant that depends upon the size and shape of the object and the density of the air. Find the limiting velocity of the object, that is, find $\lim_{t\to\infty} r(t)$.

9.

$$\lim_{x\to\infty}\left(\frac{x^3}{2x^2-1}-\frac{x^2}{2x+1}\right)$$

10.show that $\lim_{n\to\infty}\frac{1^2+2^2+\ldots+(3n)^2}{(1+2+\ldots+5n)(2n+3)}=\frac{9}{25}$

11.show that $\lim_{x\to 0^+} x\left[\left\lfloor\frac{1}{x}\right\rfloor+\left\lfloor\frac{2}{x}\right\rfloor+\cdots+\left\lfloor\frac{15}{x}\right\rfloor\right]=120.$

12.Evaluate $\lim_{x\to\frac{\pi}{4}}\frac{4\sqrt{2}-(\cos x+\sin x)^5}{1-\sin 2x}.$

13. Find the points of discontinuity of the function f, where

$$f(x)=\begin{cases}\sin x, & 0\le x\le\frac{\pi}{4}\\ \cos x, & \frac{\pi}{4}<x<\frac{\pi}{2}\end{cases}$$

14. Find the points at which f is discontinuous. At which of these points f is continuous from the right, from the left, or neither? Sketch the graph of f.

$$f(x)=\begin{cases}2x+1, & \text{if } x\le -1\\ 3x & \text{if } -1<x<1\\ 2x-1, & \text{if } x\ge 1\end{cases}$$

15. A function f is defined as follows :

$$f(x)=\begin{cases}0 & \text{for } x<0;\\ x & \text{for } 0\le x<1;\\ -x^2+4x-2 & \text{for } 1\le x<3;\\ 4-x & \text{for } x\ge 3\end{cases}$$

ALL THE BEST

SIR CV RAMAN COACHING CENTRE – IDAPPADI, SALEM – 2025

XI- MATHS UNIT – 9 MODEL QUESTION PAPER -2025

PREPARED BY

Dr.G.THIRUMOORTHI,M.Sc,B.Ed,Ph.D ,PHYSICS

thiruphysics1994@gmail.com ,8610560810,8883610465