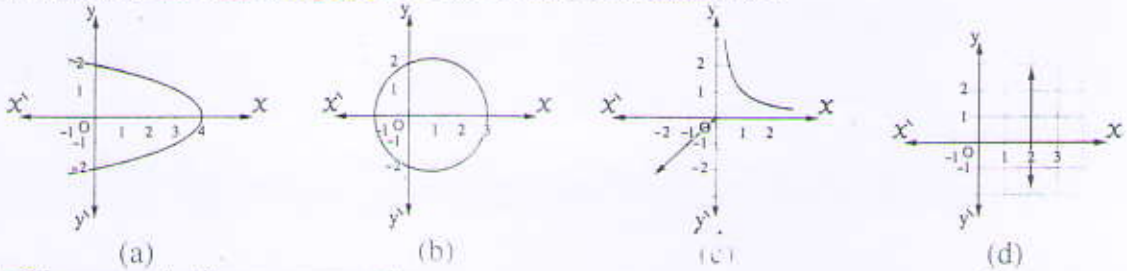
Answer the following questions :

First question *4 marks* 1 mark for each item

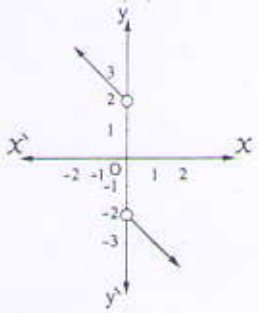
Choose the correct answer from those given :

(1) Which of the following figures represents a function in X ?



(a) (b) (c) (d)

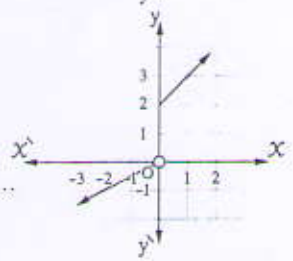
(2) The opposite figure represents a function in X whose domain is .....



(a) $\mathbb{R}$ (b) $\mathbb{R} -]-2 , 2[$

(c) $\mathbb{R} - [-2 , 2]$ (d) $\mathbb{R} - \{0\}$

(3) The opposite figure represents a function in X whose range is .....



(a) $\mathbb{R} - [0 , 2]$ (b) $\mathbb{R} - \{0\}$

(c) $\mathbb{R} - [0 , 2[$ (d) $\mathbb{R} -]0 , 2]$

(4) If $f(X) = \sqrt{4 - X^2}$, then the domain of the function f = ...

(a) $[-2 , 2]$ (b) $]-2 , 2[$

(c) $[-2 , 2[$ (d) $]-2 , 2]$

1 If X and y are two real variables , then determine which of the following relations represents a rule of a function in X :

(1) $y = 2X + 5$ (2) $y^2 = X + 4$ (3) $y = \sqrt{X^2 + 4}$

(4) $(X - y)^2 = 5$ (5) $y^3 - X^2 = 2$ (6) $y^4 = X^2 - 4X + 4$

(7) $y = 2$ (8) $X = 3$ (9) $y = 3 \sin X + \cos 2X$

(10) $Xy + y = 2X + 2$

3 Determine the domain of each of the real functions defined by the following rules :

(1) $f(x)=\frac{2x+1}{x-2}$

(2) $f(x)=\frac{x+3}{x^2-9}$

(3) $f(x)=\frac{2x+3}{x^2-3x+2}$

(4) $f(x)=\frac{x^2+1}{x^2+4x}$

(5) $f(x)=\frac{x^2-1}{3x^3+12x}$

(6) $f(x)=\frac{5+2x}{x^2+x+1}$

(7) $f(x)=\frac{x+3}{x^3-x}$

(8) $f(x)=\frac{8}{x^2-6x+9}$

(9) $f(x)=\frac{x+3}{3x^2-x-2}$

(10) $f(x)=\frac{x+1}{x^3+1}$

4 Determine the domain of each of the real functions defined by the following rules :

(1) $f(x)=\sqrt{x-3}$

(2) $f(x)=\sqrt{2-x}$

(3) $f(x)=\sqrt[3]{x-5}$

(4) $f(x)=\sqrt[4]{x^2+4}$

(5) $f(x)=\frac{4}{\sqrt[3]{2x-5}}$

(6) $f(x)=\frac{3}{\sqrt{x-3}}$

(7) $f(x)=\frac{2}{\sqrt{1-x}}$

(8) $f(x)=\sqrt{x^2-16}$

(9) $f(x)=\sqrt{4-x^2}$

(10) $f(x)=\frac{5}{\sqrt{9-x^2}}$

(11) $f(x)=\sqrt{x^2+2x+5}$

(12) $f(x)=\frac{1}{\sqrt{x^2-5x-6}}$

(13) $f(x)=\frac{1}{\sqrt{x^2-4x+4}}$

(14) $f(x)=\frac{5}{\sqrt{x}-1}$