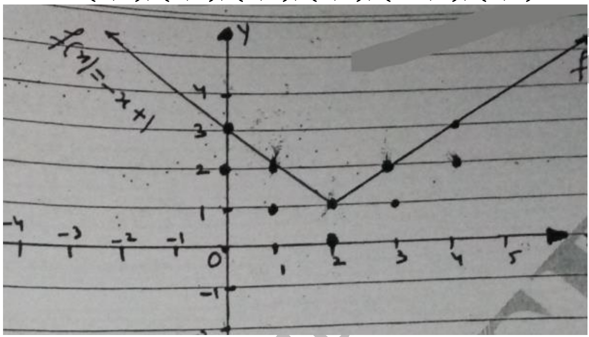
Q.11)	Find the domain of $f(x) = \frac{1}{\sqrt{1-\cos x}}$	
Sol.11)	$f(x)$ will be defined when $1 - \cos x > 0$ for all $x \in R - 1 \leq \cos x \leq 1$ But $\cos x$ cannot equal to 1 Since, $1 - \cos x > 0$ and $\cos x = 1$ when $x = 2n\pi$ (by general solution method $\therefore$ Domain = $R - \{2n\pi; n \in z\}$ ans.	
Q.12)	Let $f = \{(2,4), (5,6), (8,-1), (10,-3)\}$ $g = \{(2,5), (7,1), (8,4), (10,13), (11,-5)\}$. Find the domain of $f+g, f-g$ & fg.	
Sol.12)	Domain of f is $D_f = \{2,5,8,10\}$ Domain of g is $D_g = \{2,7,8,10,11\}$ Domain of $f+g, f-g$ & fg is always defined as Domain of $\{x: x \in D_f \cap D_g\}$ $\therefore$ Domain of $f+g, f-g$ & $fg = \{2,8,10\}$ ans.	
Q.13)	Draw the graph of $f(x) = 1 + \|x-2\|$	
Sol.13)	We have, $f(x) = 1 + [x-2]$ $f(x) = \begin{cases} 1+(x-2): x-2 \geq 0: x \geq 2 \\ 1-(x-2): x-2 < 0: x < 2 \end{cases}$ $f(x) = \begin{cases} x-1: x \geq 2 \\ -x+1: x < 2 \end{cases}$ Points $(0,3), (1,2), (2,0), (3,2), (-1,4), (4,3)$  Domain = R Range = $[1,00]$	
Q.14)	Let R be the relation on Set N (natural no.s) defined by R (roster form), domain, Range, Co-domain and allow diagram.	
Sol.14)	We have, Relation from N to N $R = \{(a,b): a + 3b = 12; a \in N \text{ and } b \in N\}$ (i) $R = \{(9,1), (6,2), (3,3)\}$ (ii) Domain = $\{9,6,3\}$ (iii) Range = $\{1,2,3\}$ (iv) Co-domain = N (v) Arrow diagram : FIG 14	
Q.15)	Let $A = \{1,2,3,4,6\}$, Let R is a relation on A defined by $R = \{(a,b): b \text{ is exactly divisible by } a\}$. Find R, domain, Range, Co-domain and Arrow diagram.	
Sol.15)	We have, relation from A to A $R = \{(a,b): b \text{ is exactly divisible by } a; a \in A, b \in A\}$ (i) $R = \{(1,1), (2,2), (3,3), (4,4), (6,6), (1,2), (1,4), (1,6), (2,4), (2,6), (3,6)\}$ (ii) Domain = $\{1,2,3,4,6\}$ (iii) Range = $\{1,2,3,4,6\}$ (iv) Co-domain = A (v) Arrow diagram:	

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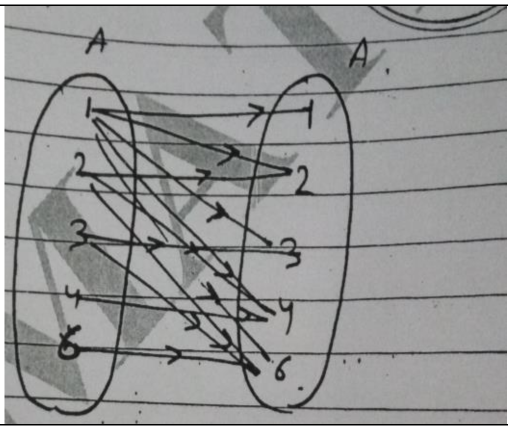
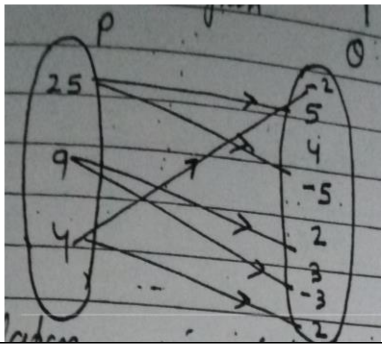
	
Q.16)	Given Arrow diagram. Find relation in set builder & Roster form also find Domain, Range, co-domain. 
Sol.16)	$R = \{(25,5), (25,-5), (9,3), (9,-3), (4,2), (4,-2)\}$ Clearly $25 = 5^2, 25 = (-5^2), 9 = 3^2$ and so on $\therefore R = \{(x,y): x = y^2; x \in P\ and\ y = Q\}$ Domain = $\{25,9,4\}$ Range = $\{5,-5,3,-3,2,-2\}$ Co-domain = $Q = \{-2,5,4,-5,2,3,-3,2\}$
Q.17)	find the domain of the function, $f(x) = \sqrt{x-3-2\sqrt{x-4}} - \sqrt{x-3+2\sqrt{x-4}}$
Sol.17)	$f(x)$ is real for all values of x such that $x-3-2\sqrt{x-4} \geq 0;\ x-3+2\sqrt{x-4} \geq 0$ and $x-4 \geq 0$ $x-3 \geq 2\sqrt{x-4}; x-3 \geq -2\sqrt{x-4}$ and $x \geq 4$ squaring squaring $\Rightarrow x^2-6x+9 \geq 4(x-4); x^2-6x+9 \geq 4(x-4)$ and $x \geq 4$ $\Rightarrow x^2-10x+25 \geq 0; x^2-10x+25 \geq 0$ and $x \geq 4$ $\Rightarrow (x-5)^2 \geq 0; (x-5)^2 \geq 0$ and $x \geq 4$ $\Rightarrow x-5 \geq 0; x-5 \geq 0$ and $x \geq 4$ $\Rightarrow x \geq 5;$ and $x \geq 4$ $\therefore$ Domain $x \in [5,00]$ ans.
Q.18)	Find the domain of the function, $f(x) = \sqrt{\frac{x+3}{(2-x)(x-5)}}$
Sol.18	$f(x)$ is real for all values of x such that $\frac{x+3}{(2-x)(x-5)} \geq 0$ and $(2-x)(x-5) \neq 0$ $\Rightarrow \frac{(x+3)}{(x-2)(x-5)} \leq 0$ and $x \neq 2\ and\ x \neq 5$ …….. $\{sign\ change\}$ $\Rightarrow \frac{(x+3)(x-2)(x-5)}{(x-2)^2(x-5)^2} \leq 0$ …… $\{multiply\ \&\ divide\ by\ (x-2)(x-5)\}$ $\Rightarrow (x+3)(x-2)(x-5) \leq 0$

	$x \in [-00, -3] \cup [2,5]$ but $x \neq 2$ and $x \neq 5$ $\therefore$ Domain is $x \in [-00, -3] \cup [2,5]$ ans.
Q.19)	$f(x) = \begin{cases} 1 - x : x < 0 \\ 1 : x = 0 \\ x + 1 : x > 0 \end{cases}$ draw graph of $f(x)$.
Sol.19)	For $x < 0$; $f(x) = 1 - x$ Points $(-1,2), (-2,3), (-3,4)$ For $x > 0$; $f(x) = x + 1$ Points $(1,2), (2,3), (3,4)$ For $x = 0$; $f(x) = 1$ Points $(0,1)$
Q.20)	Find the domain of the function, $f(x) = \frac{1}{\sqrt{[x]^2 - [x] - 6}}$.
Sol.20)	We have, $f(x) = \frac{1}{\sqrt{[x]^2 - [x] - 6}}$ $f(x)$ will be defined when $[x]^2 - [x] - 6 > 0$ Splitting middle term $\Rightarrow [x]^2 - 3[x] + 2[x] - 6 > 0$ $\Rightarrow ([x] - 3)([x] + 2) > 0$ $[x] < -2$ or $[x] > 3$ $\Rightarrow x < -2$ or $x \geq 4$ $x \in (-00, -2) \cup (4,00)$ ans.