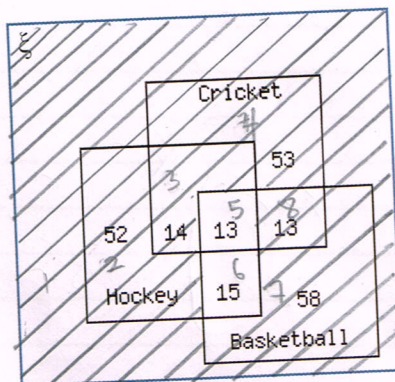


1. The following diagram shows number of students in a school who plays one of three sports.



- (a) How many students who play Hockey and Cricket?
 (b) Represent Cricket with C, Hockey with H and Basketball with B.
 On the diagram above, shade the region for the set $(C \cap H') \cup (B \cap H)'$.

[3 marks]

2. Given the relations $\{(1, 1), (2, 2), (1, 3), (3, 2), (1, 2)\}$ on the set $\{1, 2, 3\}$. Identify whether the relations given is reflexive, symmetric and/or transitive? Explain your answer.

[3 marks]

3. Illustrate the graph for the function $g(x) = \lceil x - 1 \rceil$ for the range of $-3 \leq x \leq 3$.

[3 marks]

4. Let $f(x) = x + 2$ and $g(x) = 2x - 3$. Compute $f(2)$,

[2 marks]

HASRUL SYAFIK BIN HAIRAN
 05DDT18F1055
 DDT2A

Mohd Hazwan Bin Hashim
 05DDT18F1068
 DDT2A

1-a) Hockey $\cap$ Cricket

$$= 14 + 13$$

$$= 27$$

b) $(C \cap H)' \cup (B \cap H)'$

$$H = 2, 3, 5, 6$$

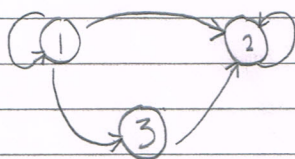
$$C = 3, 4, 5, 8$$

$$B = 6, 5, 7, 8$$

$$(C \cap H) = 4, 8$$

$$(B \cap H)' = 2, 3, 7, 8, 1$$

$$= \{2, 3, 4, 7, 8\}$$

2. $\{(1,1), (2,2), (1,3), (3,2), (1,2)\}$ 

$\Rightarrow R$ is not reflexive since $(3,3) \notin R$.

R is not symmetric since $(1,3) \in R$ but $(3,1) \notin R$, $(1,2) \in R$ but $(2,1) \notin R$ and $(3,2) \in R$ but $(2,3) \notin R$.

R is not transitive since $(1,3)$ and $(1,2) \in R$ but $(2,3) \notin R$.

$\therefore R$ is not equivalence relations since it is not reflexive, not symmetric, and not transitive.

NO:.....

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3. $g(x) = \lceil x - 1 \rceil$

$$= \lceil 0 - 1 \rceil$$

$$= \lceil -1 \rceil$$

$$= -1$$

$$= \lceil -0.2 - 1 \rceil$$

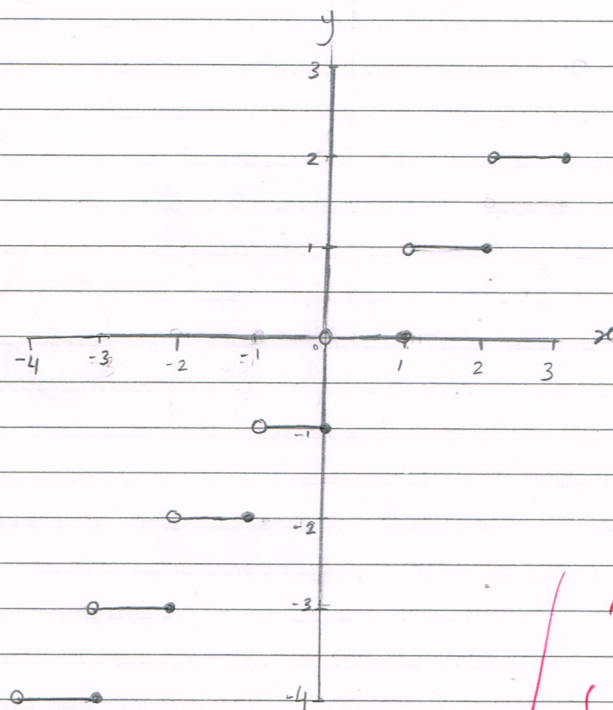
$$= \lceil -1.2 \rceil$$

$$= -1$$

$$= \lceil 2.7 - 1 \rceil$$

$$= \lceil 1.7 \rceil$$

$$= 2$$



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4. $f(x) = x+2$, $g(x) = 2x-3$, (compute $gf(2)$).

$$= gf(2)$$

$$= g[f(2)]$$

$$= g(x+2)$$

$$= 2(x+2) - 3$$

$$= 2(2+2) - 3$$

$$= 2(4) - 3$$

$$= 8 - 3$$

$$= 5$$

/ (2)