In Class Activity

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Question1

a) $\{0, 2, 4, 6, 8\}$
Ans : $P \backslash A_9$
b) $\{11, 13, 15, 17, ..., 101\}$
Ans : $I_{11} \cap A_{101}$
c) $\emptyset$
Ans : $P \cap I$
d) $\{1, 10\}$
Ans : $(B_1 \cap A_{10}) - (B_2 \cap A_9)$
e) $\{n, n+1, ...m\}$, where $n <= m$
Ans :

Question2

a) $\forall n \exists m (n^2 < m)$
Ans : True because for all n we can choose $n^2 < m$.

b) $\exists n \forall m (n < m^2)$
Ans : True because for all m we can choose $n < m^2$.

c) $\forall n \exists m (n + m = 0)$
Ans : True because for all n we can choose value of m and make this predicate true.

d) $\exists n \forall m (nm = m)$
Ans : True by putting n = 1,this predicate is always true and make it true we need only one magic value of n for all values of m .

e) $\exists n \exists m (n^2 + m^2 = 5)$
Ans : True because n=1 and m =2 we can get our solution and here we need only one set which makes it true.

f) $\exists n \exists m(n^2 + m^2 = 6)$
Ans : False because we do not get any solution for it not even a single set which makes it true.

g) $\exists n \exists m(n + m = 4 \land n - m = 1)$
Ans : False because this predicate do not have any solution not even a single.

h) $\exists n \exists m(n + m = 4 \land n - m = 2)$
Ans : True . Here we need only one solution to make it true and one solution is n=3 , m=1.

i) $\forall n \forall m \exists p(p = (m + n)/2)$
Ans : False . counter example is that when sum of m and n is not divisible by 2 . example m=2 and n=5.