Worksheet 3 Review 2

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April 11, 2020

Question 1

a. $Correct(my\_prog) \wedge Python(my\_prog)$

b. $\forall x \in P, \ \neg Correct(x) \Rightarrow Python(x)$

> **Correct Solution:**
>
> $\exists x \in P, \ \neg Correct(x) \wedge Python(x)$

c. $\forall x \in P, Python(x) \Rightarrow \neg Correct(x)$

d. $\forall x \in P, \neg Correct(x) \Rightarrow Python(x)$

e. There is a program that is written in $Python$ and is $Correct$

f. All programs are not written in $Python$ and is $Correct$

g. There is a program that is $Correct$ and not written in $Python$

h. All programs that are correct is not written in $Python$, and all programs that are $Correct$ is not written in $Python$.

Question 2

a. Either all programs that are written in $Python$ is $Correct$, or all programs that are written in $Python$ are not $Correct$

b. $(\exists x \in P, \ Python(x) \wedge Correct(x)) \Rightarrow (\forall x \in P, Python(x) \wedge Correct(x))$

c. The difference is that in statement 1, each divisibility claims can be validated with different natural numbers where as in statement 2, the two claims must be validated with a single natural number.

   The statement 1 is true, where as statement 2 is false (consider counter example of $x = 7$)

Question 3

a. $Odd(n) : \forall n \in \mathbb{Z}, \exists \in \mathbb{Z}, n + 1 = 2k$

Question 4

Question 5