

Q3)

- i) Proof A is erroneous but is well written
- ii) Proof B is correct and well written
- iii) Proof C is correct but needs to be rewritten

bi) Proof A is erroneous; It states that: " $P(2)$ is true, thus the statement is true". This is false. Induction, while it works for this statement, is not because the smallest case is true it does not mean the statement is true. You must show that each subsequent case will also be greater than $P(2)$, which would prove the statement true for $\forall x \in \mathbb{Z}, x \geq 2$.

bii) Proof C is correct but needs to be rewritten. It is correct as it shows that for every case where $x \geq 2$ (which encompasses all values of x) are ≥ 1 . While the logic is solid, it is hard to follow the steps. I would suggest adding more detail and showing the x terms substituted for $x \geq 2$. So: $(x^2 + 7x - 21) \geq 2(2)^2 + 14 - 21 = 1$
 $\Rightarrow (x^2 + 7x - 21) \geq 1$. I think adding a conclusion at the end which says since $\forall x \in \mathbb{Z}, x \geq 2$ that the statement $(2x^2 + 7x - 21)$ will be greater than or equal to 1 so it must be true (as $1 > 0$).

biii) Proof B is correct and well written, it explicitly shows the domain of x and what the minimum value is for each element. The logic flows nicely and it explicitly shows the value of the statement when $x \geq 2$ and how any $x > 2$ will have a value larger than 26.