## Question 3 (7 marks)

Let $P(x)=x^{n}+5 x^{2}+c x-1$, where $n$ is a positive integer and $c$ is a real constant.
(a) If $(x+1)$ is a factor of $P(x)$, show that $c$ is equal to either 3 or 5 .

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(b) When $P(x)$ is divided by $(x-2)$, the remainder is 57 .

Show that there is only one possible value of $n$.

(c) Hence state the polynomial $P(x)$.


