Question **1**

Partially correct

Marked out of 15

(*Horner's Method*). Use Horner's method to evaluate the polynomial

$$f(x) = x^6 - 2x^5 - 3x^4 - 4x^3 + 5x^2 + 6x + 7$$

at the specified points. All numerical answers should be rounded to 7-digit floating-point numbers.

(i) Evaluate the polynomial $f(x)$ at the point $\alpha = 1.15$:

k	a_k		b_k
6	1 ✔	0 ✔	1 ✔
5	-2 ✔	1.15 ✔	-0.85 ✔
4	-3 ✔	-0.9775 ✔	-3.9775 ✔
3	-4 ✔	-4.574125 ✔	-8.574125 ✔
2	5 ✔	-9.860244 ✔	-4.860244 ✔
1	6 ✔	-5.589281 ✔	0.410719 ☑
0	7 ✔	0.4723269 ☑	7.472327 ✔

Accordingly,

$f(1.15) \doteq$ 7.472327 ✔ .

(i) Evaluate the polynomial $f(x)$ at the point $\alpha = -1.15$:

k	a_k		b_k
6	1 ✔	0 ✔	1.0 ✔
5	-2 ✔	-1.15 ✔	-3.15 ✔
4	-3 ✔	3.6225 ✔	0.6225 ✔
3	-4 ✔	-0.715875 ✔	-4.715875 ✔
2	5 ✔	5.423256 ✔	10.42326 ✔
1	6 ✔	-11.98675 ✔	-5.98675 ☑
0	7 ✔	6.884763 ☑	13.88475 ✔

Accordingly,

$f(-1.15) \doteq$ 13.88475 ✔ .

Check

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