

Question 1

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 $\alpha = 1.45$:

k	a_k		b_k
6	1	0	1
5	2	1.45	3.45
4	-3	5.0025	2.0025
3	4	2.903625	6.903625
2	5	10.01026	15.01026
1	6	21.76488	27.76488
0	7	40.25907	47.25907

Accordingly,

$$f(1.45) \doteq 47.25907$$

(i) Evaluate the polynomial $f(x)$ at the point $\alpha = -1.45$:

k	a_k		b_k
6	1	0	1
5	2	-1.45	0.55
4	-3	-0.7975	-3.7975
3	4	5.506375	9.506375
2	5	-13.78424	-8.784243
1	6	12.73715	18.73715
0	7	-27.16887	-20.16887

Accordingly,

$$f(-1.45) \doteq -20.16887$$

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