Homework 1:

Due Date: March 12, 2024 (Tuesday)

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§1.1 Exercises for Review of Calculus

Exercise Use synthetic division (Homer's method) to find $P(c)$.

(a) $P(x)=x^4+x^3-13x^2-x-12$, $c=3$.

(b) $P(x)=2x^7+x^6+x^5-2x^4-x+23$, $c=-1$.

Solve. (a)

The format for synthetic division is illustrated in the following table.

Input $x=3$	1	1	-13	-1	-12
		3	12	-3	-12
	1	4	-1	-4	-24

Hence, $P(x)=(x-3)(x^3+4x^2-x-4)-24$ and so $P(3)=-24$.

(b)

The format for synthetic division is illustrated in the following table.

Input $x=-1$	2	1	1	-2	0	0	-1	23
		-2	1	-2	4	-4	4	-3
	2	-1	2	-4	4	-4	3	20

Hence, $P(x)=(x+1)(2x^6-x^5+2x^4-4x^3+4x^2-4x+3)+20$ and so $P(-1)=20$.