FORENAME:

SURNAME:

STUDENT NO:

12

2019–20 **MATH117 Mathematics for Architecture – Homework 1** N. Course

DEADLINE: Friday 4 October 2019, 4:50pm

Exercise 1 (Symbolic Logic). Use a truth table to prove that

$$(P \vee (Q \wedge R)) = ((P \vee Q) \wedge (P \vee R)).$$

Exercise 2 (Distance in $\mathbb{R}^2$). Let $A(1,1)$, $B(-3,4)$ and $C(-3,0)$ be three points in $\mathbb{R}^2$. Calculate the distances between these points.

(a) $\|AB\| =$

(b) $\|BC\| =$

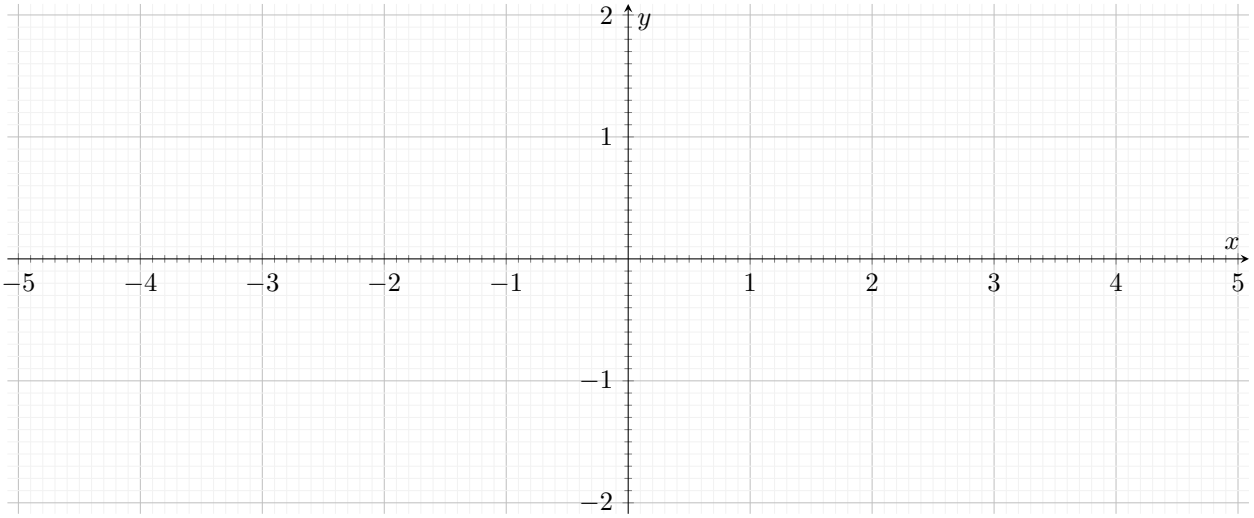
(c) $\|CA\| =$

Please remember to add your signature before submitting.

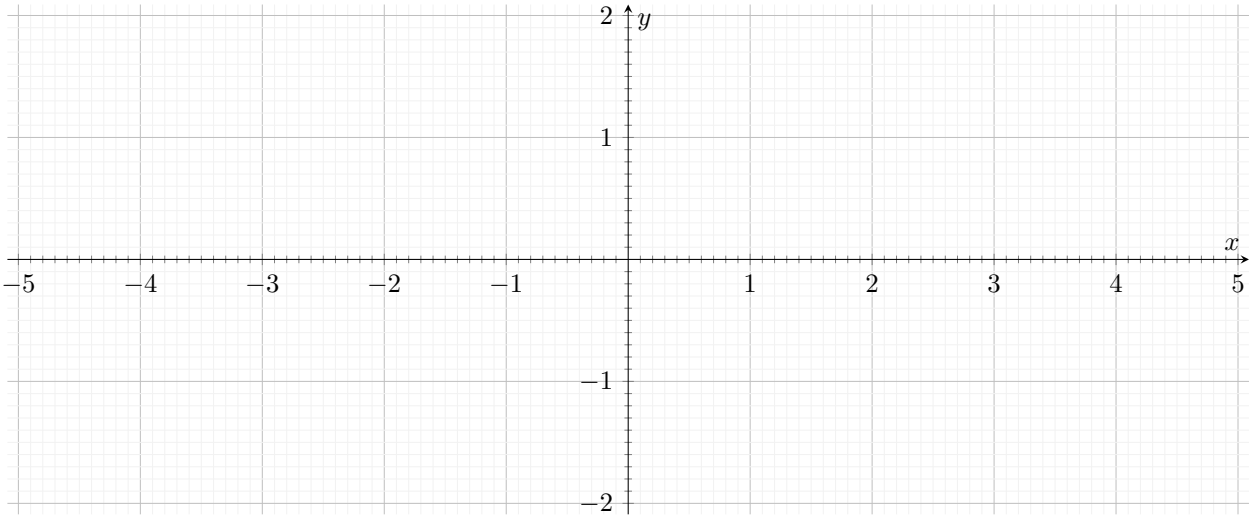
Exercise 3 (Even and Odd Functions). State whether the following functions are even, odd or neither. The first one is done for you.

(ω)	$f(x) = 3$	☑ even	☐ odd	☐ neither
(a)	$f(x) = x^{12}$	☐ even	☐ odd	☐ neither
(b)	$f(x) = x^4 - x^2$	☐ even	☐ odd	☐ neither
(c)	$f(x) = x^4 + x^2$	☐ even	☐ odd	☐ neither
(d)	$f(x) = \frac{x}{x^2+1}$	☐ even	☐ odd	☐ neither
(e)	$f(x) = \tan x$	☐ even	☐ odd	☐ neither
(f)	$f(x) = \lvert x - 1 \rvert$	☐ even	☐ odd	☐ neither

Exercise 4 (Pointwise-Defined Functions). Graph the function $g : \mathbb{R} \to \mathbb{R}$ defined by $g(x) = \begin{cases} \frac{1}{2}x, & x < 0 \\ 1 - x & 0 \le x \le 2 \\ 2 & x > 2. \end{cases}$



Exercise 5 (Cartesian Coordinates). Draw the region of points in $\mathbb{R}^2$ which satisfy $1 \le x \le 2$ **or** $-1 \le y \le 0$. [Please note that the question says "or", not "and".]



I declare that this assignment is entirely my own work. I did not copy from another student and I did not allow anyone to copy from me. *Bu ödevin tamamen kendi çalışmamın ürünü olduğunu, başka bir öğrencinin ödevini kopyalamadığımı; başkasının da benim çalışmamı kopyalamasına izin vermediğimi beyan ederim.*

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