

Name and surname:

U number:

Bridge - MGF 3301 - Section 001

Quiz 3

02/05/2020

Instructions: The total number of points for this quiz is 10. You will get an extra point if you solve correctly the last exercise. Calculators are not allowed (and actually not needed).

EXERCISE 1

(4 points)

Consider the following open sentence:

$$P(x) = "x^2 - 5x + 4 = 0 \text{ and } 0 < x < 3."$$

(a) If the Universe is \mathbb{R} , what is the truth set of $P(x)$?

(b) If the Universe is \mathbb{R} , what is the truth set of $\sim P(x)$?

EXERCISE 2

(6 points)

Consider the following (open) conditional sentence in the variables a and x , where a and x are real numbers:

$$P(a, x) = "ax = 0 \text{ and } x \neq 0 \Rightarrow a = 0."$$

(a) What is the truth value of $P(0, 1)$? What about $P(1, 0)$? Justify your answer.

(b) Write the converse of $P(a, x)$.

(c) Write the contrapositive of $P(a, x)$.

EXERCISE 3
(Bonus - 1 point)

Is the following statement true?

x is a butterfly $\Leftrightarrow x$ is a insect.

Justify your answer.