

The University of Zambia
Department of Mathematics & Statistics
Foundation Mathematics and statistics for social science

MAT1110 QUIZ 1

24-04-22

Time Allowed: 60 minutes

Instructions: Attempt all the questions.

Calculators are not allowed

Show all necessary working to earn full marks.

Name:.....

TG #.....

Computer #:.....

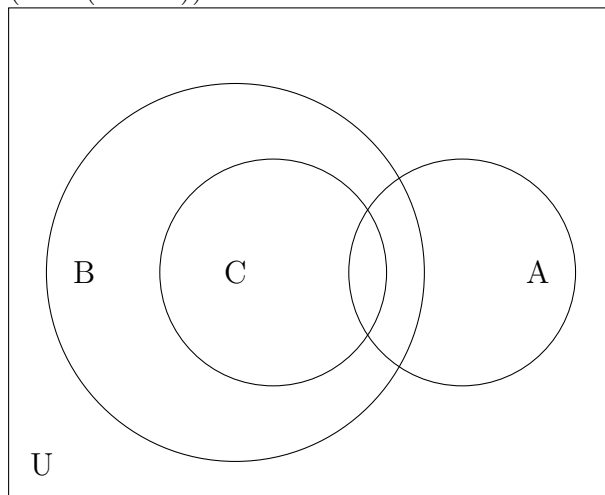
1. (a) i. Let \mathbb{R} , the set of real numbers, be the universal set, $A = (-3, 6]$, $B = [4, 8)$ and $C = [2, 10)$.
Find the set

$$(A \cup B) - C,$$

and display the solution on the line.

[3 marks]

- ii. Copy the Venn diagram below and shade the region representing $(A \cap B) \cup (C - (A \cup B))$.



[4 marks]

- (b) i.

2. (a) i. Simplify

$$\sqrt{20} + \sqrt{80} - \sqrt{180}.$$

[3 marks]

- ii. Find the value of a if

$$\frac{1 + \sqrt{2}}{-2 + \sqrt{5}} - (\sqrt{5} + \sqrt{10}) = a + a\sqrt{a},$$

where $a, b \in \mathbb{Z}$.

[4 marks]

(b) Find the value of x and of y if

$$\frac{2 + 8i}{1 - i} = x + xi + y + yi^3.$$

[6 marks]