

Quiz 4

Deadline	Wednesday, 02 October 2019 at 4:00PM
Latest Submission	Wednesday, 02 October 2019 at 10:06AM
Raw Mark	5.00/5.00 (100.00%)
Late Penalty	N/A
Final Mark	5.00/5.00 (100.00%)

Question 1 (1 mark)

True or False:

For all functions $f:X \rightarrow Y$ and $g:Y \rightarrow Z$: if f and g are both surjective then $g \circ f$ is surjective?

(a) <input checked="" type="radio"/>	True
(b) <input type="radio"/>	False

✓ Your response was correct.

Mark: 1.00

Question 2 (1 mark)

True or False:

For all functions $f:X \rightarrow Y$ and $g:Y \rightarrow Z$: if f and g are both injective then $g \circ f$ is injective?

(a) <input checked="" type="radio"/>	True
(b) <input type="radio"/>	False

✓ Your response was correct.

Mark: 1.00

Question 3 (1 mark)

Which of the following statements are true for all sets A, B, C ? Select all that apply.

(a) <input checked="" type="checkbox"/>	$(A \cup B) \cap A = A \cup (B \cap A)$
(b) <input checked="" type="checkbox"/>	$(A \cup B) \setminus C = (A \setminus C) \cup (B \setminus C)$

(c) <input type="checkbox"/>	$C \setminus (A \cup B) = (C \setminus A) \cup (C \setminus B)$
(d) <input type="checkbox"/>	$(C \setminus A)^c = (C^c) \setminus (A^c)$
(e) <input type="checkbox"/>	$(A \oplus B)^c = (A^c) \oplus (B^c)$

✓ Your response was correct.

Mark: $\max(0.50 + 0.50, 0) = 1.00$

Question 4 (1 mark)

Consider the relation $R = \{(m,n) \in \mathbb{Z} \times \mathbb{Z} : m^2 = n^2 \pmod{5}\}$.

Which of the following properties does R satisfy? Select all that apply

(a) <input checked="" type="checkbox"/>	Reflexivity (R)
(b) <input type="checkbox"/>	Antireflexivity (AR)
(c) <input checked="" type="checkbox"/>	Symmetry (S)
(d) <input type="checkbox"/>	Antisymmetry (AS)
(e) <input checked="" type="checkbox"/>	Transitivity (T)

✓ Your response was correct.

Mark: $\max(0.33 + 0.33 + 0.33, 0) = 1.00$

Question 5 (1 mark)

Let $\Sigma = \{0,1\}$ and consider the relation on Σ^* given by $R = \{(w,v) : \text{length}(w) \geq 2 \cdot \text{length}(v)\}$

Which of the following properties does R satisfy? Select all that apply

(a) <input type="checkbox"/>	Reflexivity (R)
(b) <input type="checkbox"/>	Antireflexivity (AR)
(c) <input type="checkbox"/>	Symmetry (S)
(d) <input checked="" type="checkbox"/>	Antisymmetry (AS)
(e) <input checked="" type="checkbox"/>	Transitivity (T)

✓ Your response was correct.

Mark: $\max(0.50 + 0.50, 0) = 1.00$