Quiz 3

Deadline	Monday, 30 September 2019 at 4:00PM
Latest Submission	Sunday, 29 September 2019 at 9:58PM
Raw Mark	5.00/5.00 (100.00%)
Late Penalty	N/A
Final Mark	5.00/5.00 (100.00%)

Question 1 (1 mark)

Consider $f:\mathbb{N}_{>0}\to\mathbb{N}_{>0}$ given by f(x) = 2x+1. What is the inverse image of {1,2,3}, i.e. what is $f^{\leftarrow}(\{1,2,3\})$?

(a) ○	{3,5,7}
(b) ○	{0,½,1}
(c) ○	{0,1}
(d) ◉	{1}
(e) ○	None of the above

✔ Your response was correct.
Mark: 1.00

Question 2 (1 mark)

True or false:

For all a,b ∈ ℕ, if a|b and b|a then a=b

(a) ◉	True
(b) ○	False

✔ Your response was correct.
Mark: 1.00

Question 3 (1 mark)

Which of the following relations (over ℕ) are functions? (Select all that apply)

(a) ☑	The = relation
(b) ☐	The | relation
(c) ☐	The ≤ relation
(d) ☐	The relation {}
(e) ☑	The relation $\{(n-1, n) : n \in \mathbb{N}_{>0}\}$
(f) ☐	The relation $\{(n,m,n+m) : n,m \in \mathbb{N}\}$

✔ Your response was correct.
Mark: max(0.50 + 0.50, 0) = 1.00

Question 4 (1 mark)

Let $\Sigma = \{a,b\}$ and consider $f,g:\Sigma^* \to \Sigma^*$ given by:

- f(w) = waw
- g(w) = bwb

What is $f \circ g(ab)$?

babbababb

✔ Your response was correct.
Mark: 1.00

Question 5 (1 mark)

True or false:

Over $\mathbb{Z}$, the relation defined by $(\leq \oplus \geq)$ is the same as the relation $\neq$?

(a) ◉	True
(b) ○	False

✔ Your response was correct.
Mark: 1.00