

## Worksheet: Relations and Functions

West Bengal State Board · Class 12 · Mathematics · 5 questions · 17 marks

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 17

**Q1.** Check whether  $R = \{(1,1),(2,2),(3,3),(4,4),(1,2),(2,1)\}$  on  $A = \{1,2,3,4\}$  is an equivalence relation. [3 marks]

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**Q2.** Prove  $f: \mathbb{R} \rightarrow \mathbb{R}$ ,  $f(x) = 4x + 7$  is invertible and find  $f$  inverse. [3 marks]

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**Q3.** If  $f(x) = x^2$  and  $g(x) = 2x+1$ , find  $(g \circ f)(x)$  and  $(f \circ g)(x)$ . Are they equal? [3 marks]

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**Q4.** For  $a * b = a + b + ab$  on  $\mathbb{R}$ , check commutativity and associativity and find the identity. [4 marks]

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**Q5.** Show  $f: \mathbb{R} - \{-2\} \rightarrow \mathbb{R} - \{4\}$ ,  $f(x) = \frac{4x+3}{x+2}$  is bijective. [4 marks]

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