SAMPLE RELATIONS QUESTIONS

EXAM INSTRUCTIONS:
Show neat work for full credit.
Put your name on all answer sheets.
If you leave out a question (by writing "omit"), I’ll give you 1/6 of the value.

(1) For each of the following Relations:
   • State whether or not it is an equivalence relation.
   • If it is an equivalence relation, give the equivalence classes.
   • If it isn’t, state why not.
(a) \( S = \{2, 3, 4, 5\} \quad R = \{(2,3), (3,2), (4,5), (5,4)\}\)
(b) \( S = \mathbb{Z}, \ R = \mathbb{Z} \times \mathbb{Z}\).

(2) For each of the following Relations:
   • Let The domain and codomain be \{-3, -2, -1, 0, 1, 2, 3\}
   • State whether or not it is a function.
   • If it is a function, state whether it is even, odd
   • If it isn’t, state why not.
(a) (6 pts.) \( f = \{(-3,1), (-2,2), (-1,3), (0,0), (3,1), (2,2), (1,3)\}\)
(b) (6 pts.) \( f(x) = \sqrt{x}\)