

**DISCRETE MATHEMATICS (DBM2033)**

**Session December 2017**

**SELF-EXERCISE 7**

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Instructions

- Answer ALL questions. Write your answers in the spaces provided.
- Show your working. You may use a non-programmable scientific calculator.

1. If  $f(x)=3x-1$  and  $g(x)=x^2$ , then what is  $f \circ g(x)$  and  $g \circ f(x)$ ?
2. If  $f(x) = \frac{1}{x}$  for  $x \neq 0$ , then what is  $(f \circ f)(x)$ ?
3. Given  $f$  and  $g$  are both defined on the set of real numbers.  
 $f(x) = x^2$  and  $g(x) = x + 2$   
For what value of  $x$  does  $f \circ g(x) = g \circ f(x)$ ?
4. What is the inverse of the function  $f(x) = x^2 + 2$  for  $\{x \in R | x \geq 0\}$ ?