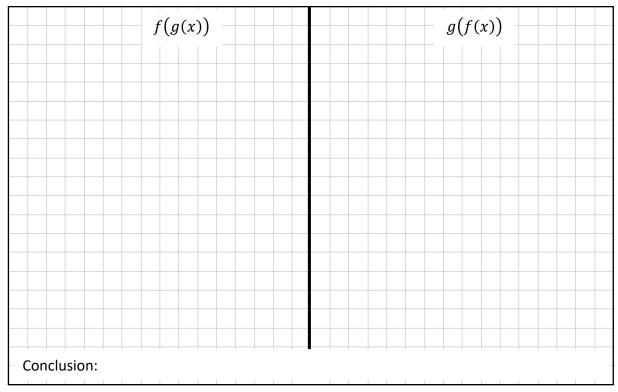
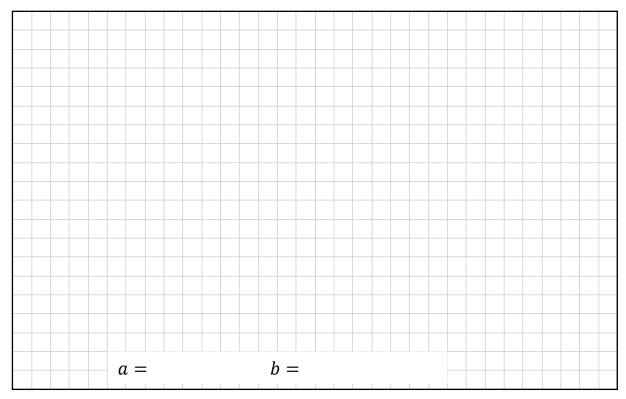
## **Question 3**

(25 marks)

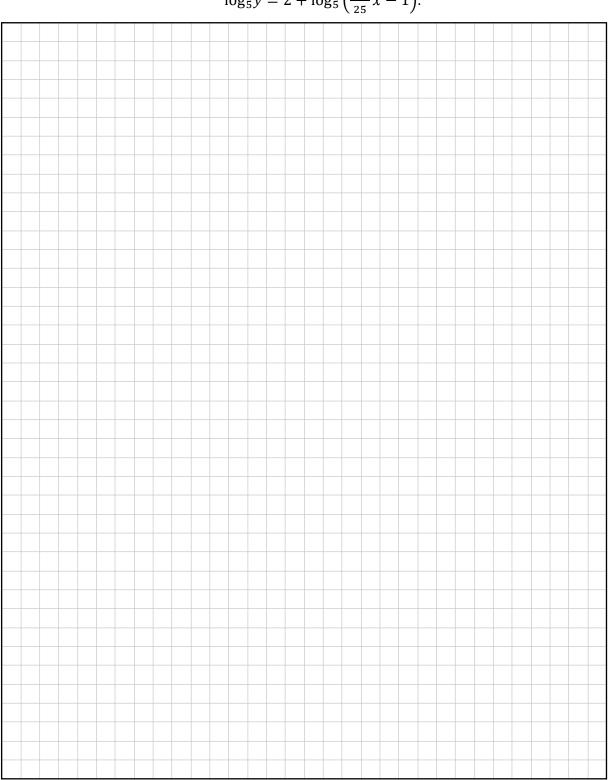
(a) 
$$f(x) = 6x - 5$$
 and  $g(x) = \frac{x+5}{6}$ . Investigate if  $f(g(x)) = g(f(x))$ .



- **(b)** The real variables y and x are related by  $y = 5x^2$ .
  - (i) The equation  $y = 5x^2$  can be rewritten in the form  $\log_5 y = a + b \log_5 x$ . Find the value of a and the value of b.



Hence, or otherwise, find the real values of  $oldsymbol{y}$  for which (ii)



$$\log_5 y = 2 + \log_5 \left( \frac{126}{25} x - 1 \right).$$