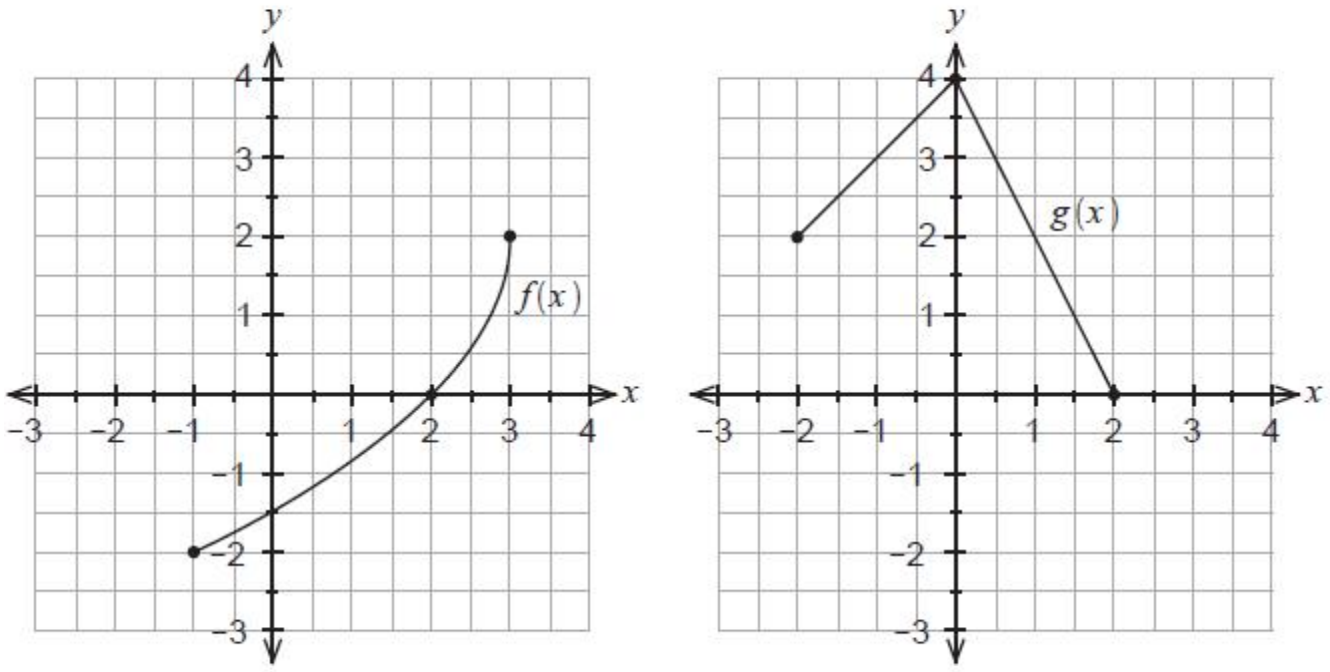
Question 2 **(11 marks)**

The graphs of functions f and g are shown below.



(a) Sketch the graph of function f^{-1} on the same axes used for function f. (2 marks)

(b) Explain why the inverse of g is not a function. (1 mark)

(b) Determine the equation of the solution curve that contains the point $(0, 0.5)$. (3 marks)

(c) Draw the solution curve that contains the point $(0, 0.5)$. (2 marks)

The defining rule for function f is $f(x) = 2 - 2\sqrt{3-x}$ where $-1 \leq x \leq 3$.

(c) Determine the rule for $y = f^{-1}(x)$. (3 marks)

Random samples of size 64 are drawn repeatedly from the population of response times and the sample mean response time $\overline{T}$ is determined for each sample.

(a) Calculate, correct to 0.001, the probability that a sample mean response time will be between 150 minutes and 210 minutes. (3 marks)