12 The function f is defined by

$$f(x) = 4 - \frac{7}{x+3}$$

(a) Write down the value of x that must be excluded from any domain of function f

(1)

(b) Find f(−1)

(1)

The function g is defined as

$$g : x \mapsto 2x^2 + 4x - 1 \text{ where } x \geqslant -1$$

Given that $fg^{-1}(x) = 1.2$

(c) find the value of x

(7)

The function h is defined as

$$h : x \mapsto x + 2 \text{ for all values of } x \geqslant -3$$

Given that the function m is such that $m(x) = gh(x) + 3$

(d) express $m(x)$ in the form $a(x + b)^2$ where a and b are integers.

(4)

(e) Find the domain of m^{-1}

(2)

Question 12 continued

Question 12 continued

Question 12 continued

Question 12 continued

(Total for Question 12 is 15 marks)

TOTAL FOR PAPER IS 100 MARKS