15. A quadratic function, \( f \), is defined on \( \mathbb{R} \), the set of real numbers.

Diagram 1 shows part of the graph with equation \( y = f(x) \).
The turning point is \((2, 3)\).

Diagram 2 shows part of the graph with equation \( y = h(x) \).
The turning point is \((7, 6)\).

(a) Given that \( h(x) = f(x+a) + b \).

Write down the values of \( a \) and \( b \).

(b) It is known that \( \int_3^5 f(x) \, dx = 4 \).

Determine the value of \( \int_6^8 h(x) \, dx \).

(c) Given \( f'(1) = 6 \), state the value of \( h'(8) \).

Answers

(a) \( a = -5, b = 3 \)

(b) 10

(c) \(-6\)