**6.** The function f is defined by

$$f(x) = \frac{4x + 3}{x - 2} \qquad x \neq 2$$

(a) Find $f^{-1}$

**(3)**

(b) Show that

$$ff(x) = \frac{ax + b}{cx + d}$$

where $a$, $b$, $c$ and $d$ are integers to be found.

**(3)**

The point $P(3, 15)$ lies on the curve with equation $y = f(x)$.

(c) Find the point to which $P$ is mapped when $y = f(x)$ is transformed to the curve with equation $y = 2f(3x) + 8$

**(2)**

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**Question 6 continued**

**Question 6 continued**

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**Question 6 continued**

**(Total for Question 6 is 8 marks)**

**7.** Given that $a$ and $b$ are positive constants with $a > b$,

(a) sketch, on **separate** diagrams, the graph with equation

(i) $y = |3x - a|$

(ii) $y = |3x - a| - b$

Show on each sketch

- the coordinates of the minimum point on the graph
- the coordinates of the point at which the graph crosses the $y$-axis

**(6)**

(b) Solve the equation

$$|3x - a| - b = 5x$$

giving any solution for $x$ in terms of $a$ and $b$.

**(2)**

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