

$$f(x) = 2x^3 + 5x^2 + 2x + 15$$

(2)

$$f(x) = (x + 3)(ax^2 + bx + c)$$

(2)

(2)

(1)

[illegible]

$$f(x) = ax^3 + 10x^2 - 3ax - 4$$

You must make your method clear.

(3)

$$f(x) = (x - 4)(x^2 - 3x + k) - 42 \text{ where } k \text{ is a constant}$$

Given that $(x + 2)$ is a factor of $f(x)$, find the value of k .

(3)

In this question you must show all stages of your working.

Solutions relying entirely on calculator technology are not acceptable.

$$f(x) = 4x^3 + 5x^2 - 10x + 4a \quad x \in \mathbb{R}$$

where a is a positive constant.

Given $(x - a)$ is a factor of $f(x)$,

(a) show that

$$a(4a^2 + 5a - 6) = 0 \quad (2)$$

(b) Hence

(i) find the value of a

(ii) use algebra to find the exact solutions of the equation

$$f(x) = 3 \tag{4}$$

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.