

10

(a) Express $f(x)$ in partial fractions.

[6]

This image shows a full page of white paper with horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

(b) Hence obtain the expansion of $f(x)$ in ascending powers of x , up to and including the term in x^2 .
[5]

This image shows a full page of a handwriting practice worksheet. It consists of approximately 20 horizontal rows. Each row is defined by two parallel dotted lines, creating a series of uniform gaps for writing. The lines are evenly spaced across the entire page, providing a guide for letter height and placement. There is no text or other markings on the page.

1

[1]

(b)

[2]

[illegible]

5 The polynomial $3x^3 + pax^2 + 7a^2x + qa^3$ is denoted by $f(x)$, where p, q and a are constants and $a \neq 0$.

When $f(x)$ is divided by $(x+2a)$ the remainder is $-22a^3$. When $f(x)$ is divided by $(3x-a)$ the remainder is $-a^3$.

Find the values of p and q .

[5]

This image shows a full page of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page, typical of notebook or legal stationery. There are no margins, text, or other markings on the page.

[3]

[illegible]

(b) The variables x and y satisfy the differential equation

$$\frac{dy}{dx} = \frac{x^3 + 5x^2 - 2x - 15}{6y(x^2 - 3)}.$$

It is given that $y = 2$ when $x = 2$.

[5]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. At the bottom center, there is a small circular logo containing the letter 'E'.

This image shows a full page of a worksheet designed for handwriting practice. It features approximately 20 horizontal dashed lines spaced evenly across the page, providing a guide for letter height and placement. The background is plain white, and there are no other markings or text present.

- 2 (a)** Expand $(6-x)(1-2x)^{-\frac{1}{2}}$ in ascending powers of x , up to and including the term in x^2 , simplifying the coefficients. [4]

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- (b)** State the set of values of x for which the expansion is valid. [1]

[illegible]

10

(a)

 x^2

[2]

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(b)

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 $1(2\gamma$ $c)dy$

2

[6]

57

[illegible]

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