

- 9 (a) Expand $\left(1 - \frac{3x}{4}\right)^{\frac{1}{3}}$ in ascending powers of x up to and including the term in x^3 , simplifying your terms as far as possible. (3)

- (b) Expand $\left(1 + \frac{3x}{4}\right)^{-\frac{1}{3}}$ in ascending powers of x up to and including the term in x^3 , simplifying your terms as far as possible. (3)

- (c) Write down the range of values of x for which both of your expansions are valid. (1)

- (d) Expand $\left(\frac{4-3x}{4+3x}\right)^{\frac{1}{3}}$ in ascending powers of x up to and including the term in x^3 , simplifying your terms as far as possible. (3)

- (e) Hence obtain an estimate, to 3 significant figures, of

$$\int_0^{0.5} \left(\frac{4-3x}{4+3x}\right)^{\frac{1}{3}} dx \quad (4)$$



Question 9 continued

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Question 9 continued

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.

(Total for Question 9 is 14 marks)

