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1. (a) Find the first 4 terms, in ascending powers of x, of the binomial expansion of

$$\left(2 - \frac{x}{4}\right)^{10}$$

giving each term in its simplest form.

(4)

(b) Hence find the constant term in the series expansion of

$$\left(3 - \frac{1}{x}\right)^2 \left(2 - \frac{x}{4}\right)^{10}$$

(3)

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Question 1 continued

Q1

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2.

$$y = \frac{2^x}{\sqrt{(5x^2 + 3)}}$$

(a) Complete the table below, giving the values of y to 3 decimal places.

x	–0.25	0	0.25	0.5	0.75
y	0.462		0.653		0.698

(1)

(b) Use the trapezium rule, with all the values of y from the completed table, to find an approximate value for

$$\int_{-0.25}^{0.75} \frac{2^x}{\sqrt{(5x^2 + 3)}} \, dx$$

(3)

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