

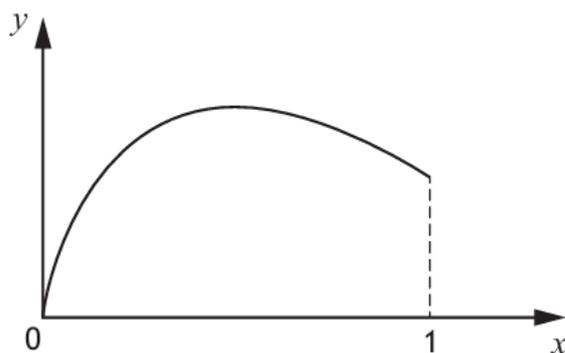
Advanced Higher Maths
SQA 2025 Paper 2
Question 11



(a) Using the substitution $u = 2x^2$, or otherwise, find $\int xe^{-2x^2} dx$.

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The diagram shows part of the curve with equation $y = \frac{4\sqrt{x}}{e^{x^2}}$.



A solid is generated by rotating the curve through 2π radians about the x -axis from $x = 0$ to $x = 1$.

(b) Calculate the exact value of the volume generated.

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Answers:

(a) $-\frac{1}{4}e^{-2x^2} + c$

(b) $4\pi(1 - e^{-2})$