

Integration Revision Questions

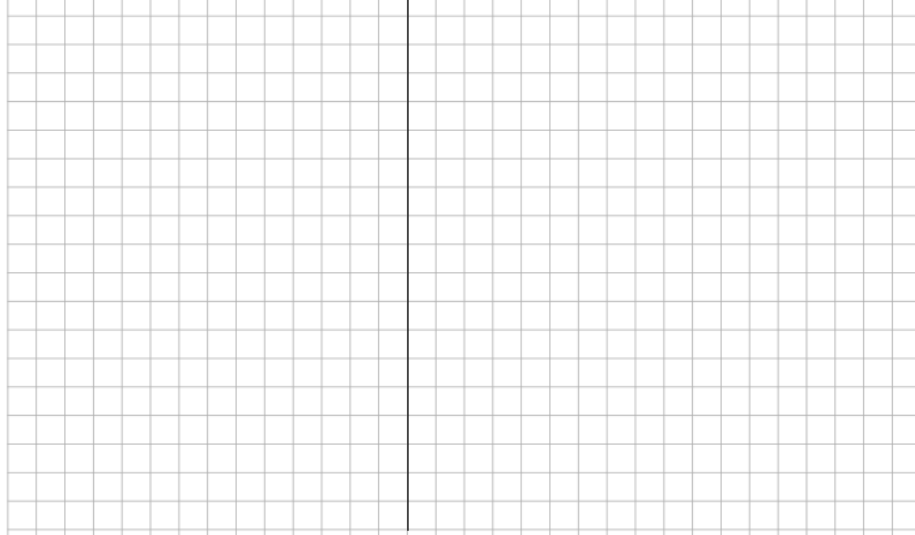
1. Indefinite integrals

e.g. find

(i) $\int \left(\frac{1}{x^2} + \frac{1}{x} \right) dx$

(ii) $\int \sin 5x dx$

(iii) $\int (2x-1)^2 dx$



2. Definite integrals

e.g. evaluate

(i) $\int_0^1 (3x^2 + 2^x) dx$

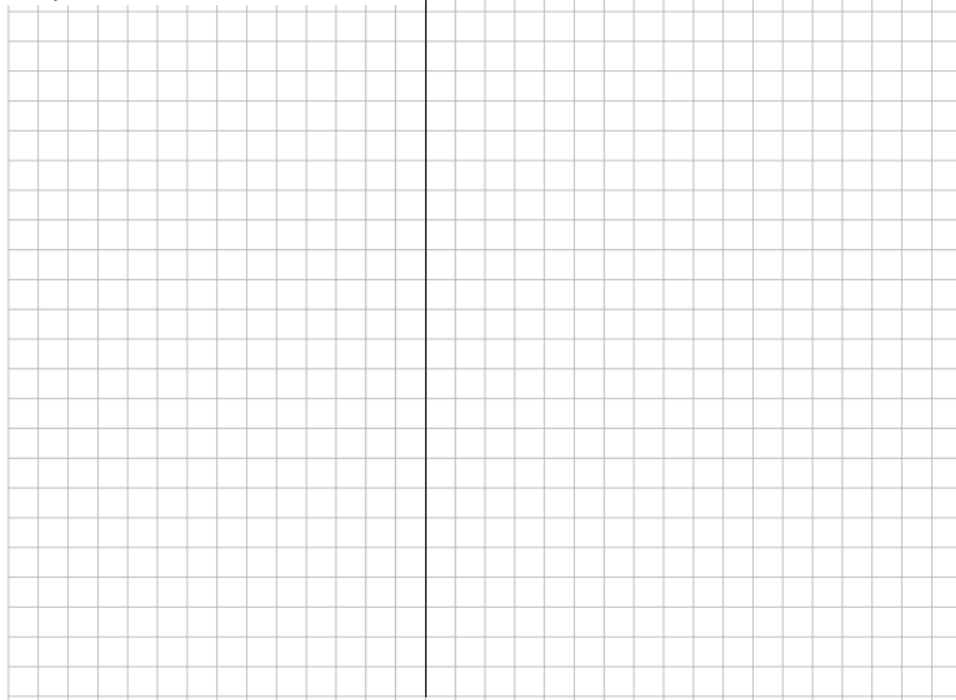
(ii) $\int_0^{\frac{\pi}{4}} \cos 2x dx$



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3. Area by integration

e.g. find the area of the region bounded by the curve $y = x^2 - 4$ and the line $y = x + 2$



4. Average value of a function

e.g. The volume, $V \text{ cm}^3$, of liquid in a conical vessel is given by

$$V = \frac{\pi}{12} h^3$$

where $h \text{ cm}$ is the depth of the water. Find the average volume of water in the bowl as the depth increases from 2 cm to 12 cm .

