INTEGRATION **SET 2**

1 Integrate the following:

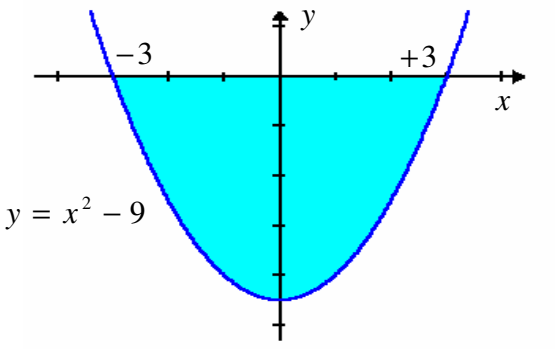
(*a*) $\int (2x-3)dx$ (*b*) $\int (4-4x^3)dx$ (*c*) $\int (x-3)^2\,dx$

(*d*) $\int \dfrac{x^4+1}{x^2}\,dx$ (*e*) $\int \sqrt{x}\left(1+\sqrt{x}\right)dx$

2 Find the particular solution of the differential equation $\dfrac{dy}{dx} = 2x-1$, given (2,8).

3 Evaluate $\int_{-1}^{2} (3x-1)^2\,dx$

4 The diagram below represents a bulkhead cross-section from a trawler modelled by the area between the curve $y = x^2 - 9$ and the x-axis.



Calculate the area of the bulkhead cross-section where 1 unit = 2 metres.

5 (*a*) Sketch the following pair of curves on the same diagram.

$y = x^2 - 2x$ and $y = 2x$

(*b*) Calculate the area of the region enclosed by the curves.

6 Given that $\int_0^a \sqrt[3]{x}\,dx = 12$, find the value of a.