

3 Evaluate $\int_0^{\frac{2}{3}} (3x-2)^3 dx$.

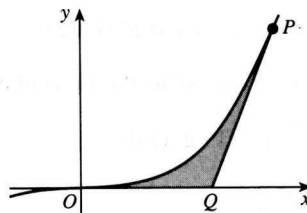
4 Find $\int_0^4 \sqrt{2x+1} dx$.

5 (a) Find $\int \left(\frac{1}{x^3} + x^3 \right) dx$. (b) Evaluate $\int_0^8 \frac{1}{\sqrt[3]{x}} dx$.

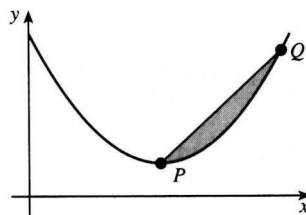
6 Find the area of the region enclosed between the curve $y = 12x^2 + 30x$ and the x -axis.

7 Given that $\int_{-a}^a 15x^2 dx = 3430$, find the value of the constant a .

8 The diagram shows the curve $y = x^3$. The point P has coordinates $(3, 27)$ and PQ is the tangent to the curve at P . Find the area of the region enclosed between the curve, PQ and the x -axis.



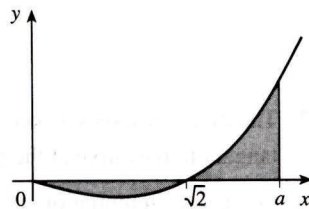
9 The diagram shows the curve $y = (x-2)^2 + 1$ with minimum point P . The point Q on the curve is such that the gradient of PQ is 2. Find the area of the region, shaded in the diagram, between PQ and the curve.



10 Evaluate $\int_0^2 x(x-1)(x-2) dx$ and explain your answer with reference to the graph of $y = x(x-1)(x-2)$.

11 (a) Find $\int x(x^2 - 2) dx$.

(b) The diagram shows the graph of $y = x(x^2 - 2)$ for $x \geq 0$. The value of a is such that the two shaded regions have equal areas. Find the value of a .
(OCR)



12 Given that $\int_1^p (8x^3 + 6x) dx = 39$, find two possible values of p . Use a graph to explain why there are two values.

13 Show that the area enclosed between the curves $y = 9 - x^2$ and $y = x^2 - 7$ is $\frac{128\sqrt{2}}{3}$.

