THE DEFINITE INTEGRAL AND THE PRIMITIVE FUNCTION

1 Evaluate $\int_0^3 x^2\,dx$, $\int_3^0 x^2\,dx$ and show that $\int_0^3 x^2\,dx = -\int_3^0 x^2\,dx$.

2 Evaluate $\int_1^2 x^2\,dx$, $\int_2^3 x^2\,dx$, $\int_1^3 x^2\,dx$ and show that $\int_1^3 x^2\,dx = \int_1^2 x^2\,dx + \int_2^3 x^2\,dx$.

5 Evaluate: **(a)** $\int_0^1 (2x-5)dx$ **(b)** $\int_{-1}^4 (3x+1)dx$ **(c)** $\int_{-2}^2 \left(x^2-4\right)dx$

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Evaluate

(g) $\int_{-8}^{8} x^{\frac{2}{3}}\,dx$

(h) $\int_{0}^{1}\left(x^{\frac{1}{5}}-x^{\frac{1}{3}}\right)dx$

(i) $\int_{0}^{1}\left(\sqrt{x}-\sqrt[3]{x}\right)dx$

13 If $\int_0^a (4-2x)dx = 4$, find the value of a.

14 If $\int_{-1}^a x\,dx = 0$, find the value of a.