Section 3: Further integration

Section test

1. $\int \frac{1}{x^7}\,\mathrm{d}x =$

(a) $-\frac{1}{7x^6}+c$ (b) $-\frac{6}{x^6}+c$

(c) $-\frac{1}{6x^6}+c$ (d) $-\frac{7}{x^6}+c$

2. $\int x^{\frac{1}{4}}\,\mathrm{d}x =$

(a) $\frac{1}{4}x^{\frac{5}{4}}+c$ (b) $\frac{5}{4}x^{\frac{5}{4}}+c$

(c) $\frac{4}{5}x^{\frac{5}{4}}+c$ (d) $4x^{\frac{5}{4}}+c$

3. $\int \frac{2x-1}{\sqrt{x}}\,\mathrm{d}x =$

(a) $\frac{4}{3}x^{\frac{3}{2}}-2x^{\frac{1}{2}}+c$ (b) $2\sqrt{x}(x^2-x)+c$

(c) $\frac{x^2-x}{\frac{2}{3}x^{\frac{3}{2}}}+c$ (d) $3x^{\frac{3}{2}}-\frac{1}{2}x^{\frac{1}{2}}+c$

4. Find $\int_1^2\left(\frac{3}{x^2}-\frac{8}{x^5}\right)\mathrm{d}x$

5. Find $\int_0^1(2x-1)\sqrt[3]{x}\,\mathrm{d}x$

6. A curve has gradient function $\frac{\mathrm{d}y}{\mathrm{d}x}=\frac{3}{x^2}$ and passes through the point (3, 2). Find the equation of the curve.

7. A curve has gradient function $\frac{\mathrm{d}y}{\mathrm{d}x}=\frac{1}{\sqrt{x}}$ and passes through the point (4, 3). Find the equation of the curve.

8. Find the area under the graph $y=1-\frac{1}{x^3}$ between x = -2 and x = -1.

9. Find the area enclosed by the graph $y=\sqrt{x}$, the x-axis and the line x = 4.

10. Find the area enclosed by the graph $y=\frac{1}{x^2}$, the coordinate axes, the line x = 2 and the line y = 4.

