

### Exercise 1. Standard integrals

Determine the following integrals:

1. (a)  $\int 4 dx$  (b)  $\int 7x dx$

2. (a)  $\int \frac{2}{5}x^2 dx$  (b)  $\int \frac{5}{6}x^3 dx$

3. (a)  $\int \left( \frac{3x^2 - 5x}{x} \right) dx$  (b)  $\int (2 + \theta)^2 d\theta$

4. (a)  $\int \frac{4}{3x^2} dx$  (b)  $\int \frac{3}{4x^4} dx$

5. (a)  $2 \int \sqrt{x^3} dx$  (b)  $\int \frac{1}{4} \sqrt[4]{x^5} dx$

## Exercise 2. Definite integrals

In Problems 1 to 8, evaluate the definite integrals (where necessary, correct to 4 significant figures).

1. (a)  $\int_1^4 5x^2 dx$  (b)  $\int_{-1}^1 -\frac{3}{4}t^2 dt$

2. (a)  $\int_{-1}^2 (3-x^2)dx$  (b)  $\int_1^3 (x^2-4x+3)dx$

3. (a)  $\int_0^\pi \frac{3}{2} \cos \theta d\theta$  (b)  $\int_0^{\frac{\pi}{2}} 4 \cos \theta d\theta$

4. (a)  $\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} 2 \sin 2\theta d\theta$  (b)  $\int_0^2 3 \sin t dt$

5. (a)  $\int_0^1 5 \cos 3x dx$  (b)  $\int_0^{\frac{\pi}{6}} 3 \sec^2 2x dx$