Railway Engineering Mathematics
Tutorial Sheet 15

1. Evaluate the following indefinite integrals:

(a) $\displaystyle\int 4x - 3 \; \mathrm{d}x$

(b) $\displaystyle\int 5x^2 + 2x + 1 \; \mathrm{d}x$

(c) $\displaystyle\int 6x^{-2} + 4\cos(9x) - 6\,\mathrm{e}^{5x} \; \mathrm{d}x$

(d) $\displaystyle\int \frac{5}{x^3} - 7\,\mathrm{e}^{-2x} + 2x^{-1} \; \mathrm{d}x$

(e) $\displaystyle\int \frac{11x^3}{2} + \frac{3\sin(2x)}{5} - 6\cos\left(\frac{7x}{4}\right) \; \mathrm{d}x$

2. Evaluate the following definite integrals:

(a) $$\int_1^4 7x + 2 \,\mathrm{d}x$$

(b) $$\int_{-2}^3 2x^2 - x + 5 \,\mathrm{d}x$$

(c) $$\int_{-\pi}^{2\pi} 3\cos(1.5t) \,\mathrm{d}t$$

(d) $$\int_2^7 \frac{5}{2x} \,\mathrm{d}x$$

(e) $$\int_{-0.5}^{2.3} -2\,\mathrm{e}^{3\theta} \,\mathrm{d}\theta$$