

Self-assessment: 13 Basic integration and its applications

1. Find $\int \frac{\sqrt{x} - 3x^2}{4x^3} dx$

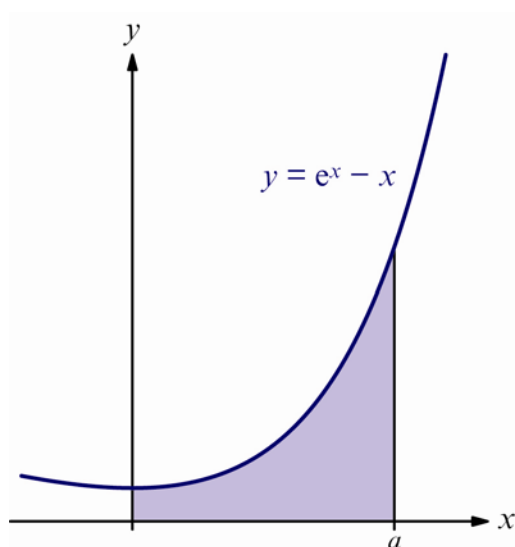
(accessible to students on the path to grade 3 or 4) [6 marks]

2. Do not use a calculator to answer this question.

Find the exact value of $\int_0^{\pi/3} 4 \cos x dx$.

(accessible to students on the path to grade 3 or 4) [5 marks]

3. The diagram shows the graph of $y = e^x - x$. Find the value of a such that the shaded area equals 6.8.



(accessible to students on the path to grade 5 or 6) [6 marks]

4. A curve has gradient $f'(x) = 2x - 6$ and passes through the point $(2, 0)$.

- (a) Find the equation of the curve.
- (b) Find the equation of the normal to the curve at the point $(2, 0)$.
- (c) Find the area of the region enclosed by the curve and the normal.

(accessible to students on the path to grade 5 or 6) [13 marks]