**Self-assessment: 13 Basic integration and its applications**

**1.** Find 

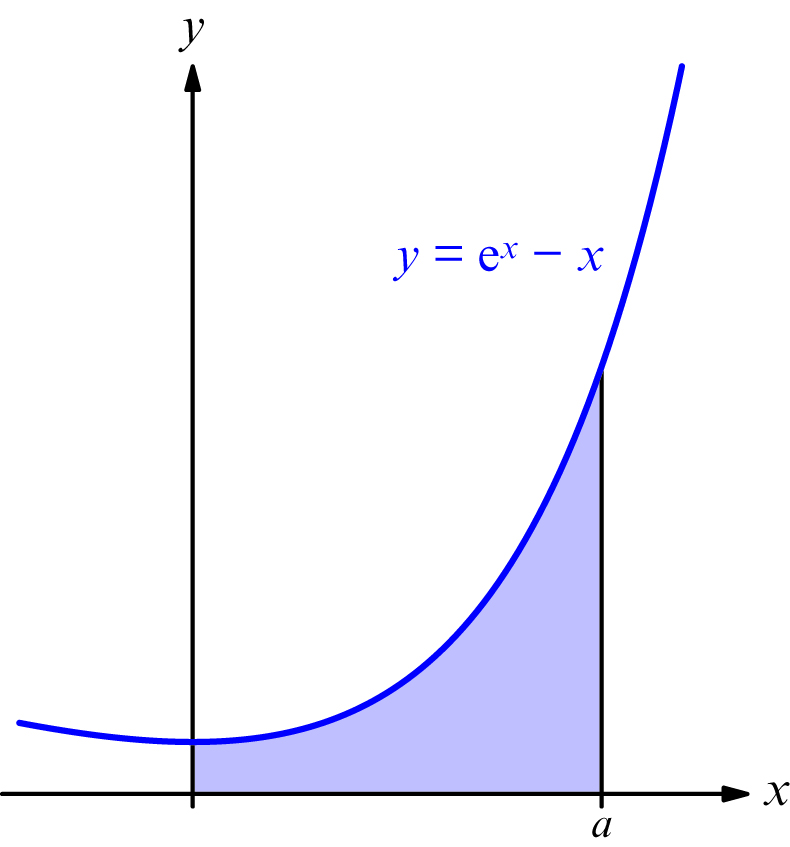
*(accessible to students on the path to grade 3 or 4) [6 marks]*

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

Find the exact value of .

*(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*) = 2*x* − 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]*