7 The curve C has polar equation $r^2 = e^{\sin\theta}\cos\theta$, for $-\frac{1}{2}\pi \leqslant \theta \leqslant \frac{1}{2}\pi$.

(a) Find the polar coordinates of the point on C that is furthest from the pole, giving your answers correct to 3 decimal places. [5]

(b) Find the polar coordinates of the point on C that is furthest from the half-line $\theta = \frac{1}{2}\pi$, giving your answers correct to 3 decimal places. [5]

(d) Find the area of the region bounded by C, giving your answer in exact form. [3]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.