Advanced Challenge Level 2 Problem #27 _____

Let f and g be functions given by $f(x) = e^x$ and $g(x) = \ln x$.

(a) Find the area of the region enclosed by the graphs of f and g between x = 1/2 and x = 1.

(b) Find the volume of the solid generated when the region enclosed by the graphs of f and g between x = 1/2 and x = 1 is revolved about the line y = 4.

(c) Let h be the function defined by h(x) = f(x) – g(x). Find the absolute minimum value of h(x) on the closed interval $1/2 \leq x \leq 1$.