

5.

$$f(x) = \frac{1}{\sqrt{x^2 + 2x + 10}}$$

(a) Determine  $\int f(x) dx$

(3)

(b) Hence show that the mean value of  $f(x)$  over the interval  $[2, 20]$  may be expressed in the form  $a \ln(b + c\sqrt{2})$ , where  $a$ ,  $b$  and  $c$  are rational constants to be determined.

(3)