$$
\begin{aligned}
Var(\hat{e}_i) &= Var(y_i - \hat{y}_i) \\
&= Var(-h_{ii}y_i - \sum_{i \neq j} h_{ij}y_j + \overline{y}_i) \\
&= Var((1 - h_{ii})y_i - \sum_{i \neq j} h_{ii}y_j) \\
&= (1 - h_{ii})^2\sigma^2 + \sum_{j \neq i} h_{ij}^2\sigma^2 \\
&= (1 - h_{ii})^2\sigma^2 + h_{ii}\sigma^2 \\
&= \sigma^2(1 - 2h_{ii} + h_{ii}) \\
&= \sigma^2(1 - h_{ii})
\end{aligned}
$$

$$
\frac{1}{\mu}\int \frac{du}{\sqrt{V(\mu)}}
$$