1. Exploration Activity

(a) Find a function $G(t)$ such that $\frac{dG}{dt} = \sin t$.

(b) Let $F(t) = t$, and write out the Product Rule for this choice of $F$ and $G$.

(c) Solve the resulting equation for $t \sin t$.

(d) Use the result to fill in the blank:

$$t \sin t = \frac{d}{dt} \left( \begin{array}{c}
\text{(expression)}
\end{array} \right).$$

(e) Write your result in part (c) in terms of an indefinite integral.