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HW 27
Lesson 14, exercise 4. Take $g(t) = \sin(t)$. Take $\alpha^2 = 1$.
Using Duhamel's principle, what is the solution of the IBVP

PDE	$u_t = \alpha^2 u_{xx}$	$0 < x < 1$	$0 < t < \infty$
BCs	$\begin{cases} u(0,t) &= 0 \\ u(1,t) &= \sin t \end{cases}$		$0 < t < \infty$
IC	$u(x,0) = 0$	$0 \leq x \leq 1$	