

**Problems from Weber and Arfken:**

W&A 8.2.12

W&A 8.3.14

**Problem 3**

Find a solution of the one-dimensional diffusion equation

$$\frac{\partial u}{\partial t} = D \frac{\partial^2 u}{\partial x^2}$$

that satisfies the initial condition

$$u(x, 0) = A[\sin(kx) + 1]$$

and remains finite for all  $x$  as  $t \rightarrow \infty$ .

**Plus:** Write a short resumé of the material on differential equations.