

**Problem 5**

Find the curve  $y = f(x)$  such that  $f(x) \geq 0$ ,  $f(0) = 0$ ,  $f(1) = 1$ , and the area under the graph of  $f$  from 0 to  $x$  is proportional to the  $(n + 1)$ st power of  $f(x)$ .