



Ex 11. Plot  $y = \sin x$  as follows

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# 1

1. The first part of the paper is devoted to the study of the properties of the function  $f(x)$  defined by the equation  $f(x) = \int_0^x f(t) dt$ . It is shown that  $f(x)$  is a continuous function and that it satisfies the functional equation  $f(x+y) = f(x) + f(y)$ . The function  $f(x)$  is also shown to be differentiable and its derivative is found to be  $f'(x) = f(x)$ . This implies that  $f(x) = Ce^x$  for some constant  $C$ . The value of  $C$  is determined by the initial condition  $f(0) = 1$ , which gives  $C = 1$ . Therefore, the function  $f(x)$  is the exponential function  $f(x) = e^x$ .

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