Obtain Maclaurin's expansion for of e^x.

Soln: Let

$f(x) = e^x$ $\quad f(0) = e^0 = 1$

$f'(x) = e^x$ $\quad f'(0) = e^0 = 1$

$f''(x) = e^x$ $\quad f''(0) = 1$

$f'''(x) = e^x$ $\quad f'''(0) = 1$

$f^{iv}(x) = e^x$ $\quad f^{iv}(0) = 1$

$f^{v}(x) = e^x$ $\quad f^{v}(0) = 1.$

~~$f(x) = A + \ldots$~~

~~$f(x) = f'(0) + \ldots$~~

$$f(x) = f(0) + f'(0)x + \frac{f''(0)}{2!}x^2 + \frac{f'''(0)}{3!}x^3 + \ldots$$

$$e^x = 1 + x + \frac{1}{2!}x^2 + \frac{x^3}{3!} + \frac{x^4}{4!} + \frac{x^5}{5!} + \ldots$$