Q. Find root of $e^x = 5x$

Soln: Let,

$$x_0 = 3$$

$$f(x) = e^x - 5x$$

$$\Rightarrow f'(x) = e^x - 5$$

$$\therefore x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}$$

$$= 3 - \frac{5.085537}{15.085537}$$

$$= 2.662887$$

$$x_2 = 2.662887 - \frac{1.023183}{9.337616}$$

$$= 2.553310$$

~~$x_3 = 0.083016 - 7.840567$~~ 0.

$$x_3 = 2.553310 - \frac{0.083016}{7.840567}$$

$$= 2.542734$$

$$x_4 = 2.542734 - \frac{0.000716}{7.714387}$$

$$= 2.542641$$

$$x_5 = 2.542641 - \frac{0.000002}{7.713207}$$

$$= 2.542641$$

$\therefore$ Root is 2.542641