

The integrating factor of the linear DE
 $\frac{dy}{dx} + y \sec x = \tan x$ is

Solution:

$$\text{Given, } \frac{dy}{dx} + y \sec x = \tan x$$

which is of the form $\frac{dy}{dx} + y P(x) = Q(x)$

$$\therefore \text{Integrating factor} = e^{\int P(x) dx}$$

$$= e^{\int \sec x dx}$$

$$= e^{\log(\sec x + \tan x)}$$

$$= \sec x + \tan x$$