Exercise 1 (5 points)
Evaluate: $\int x \ln x \, dx$  (show all your steps)

Exercise 2 (5 points)
Use cylindrical shells to find the volume of the solid obtained by rotating the region enclosed by the curves $y = e^x$, $y = 2, x = 0$ about X-axis (show all your steps, Disk method is not acceptable)
Exercise 1 (5 points)
Use cylindrical shells to find the volume of the solid obtained by rotating the region enclosed by the curves \( y = x^2 \) and \( y = |x| \) about X-axis (show all your steps, Disk method is not acceptable)

Exercise 2 (5 points)
Evaluate \( \int x \tan^{-1} x \, dx \) (show all your steps)
Exercise 1 (5 points)
Use cylindrical shells to find the volume of the solid obtained by rotating the region enclosed by the curves \( y = x^3 \) and \( y = x \) about X-axis (show all your steps, **Disk method is not acceptable**)

Exercise 2 (5 points)
Evaluate the integral \( \int x \sin x \cos x \, dx \) (show all your steps)