

I) Evaluate the following integrals:

a- $\int x^2 \cos(x) dx$

b- $\int_2^4 x \ln(x) dx$

c- $\int \sin^2(2x) \cos(2x) dx$

d- $\int \sec(x) dx$

e- $\int \sec(x) \tan^3(x) dx$

f- $\int_0^1 \frac{x}{\sqrt{2x+1}} dx$

II) Draw then find the volumes:

i) Draw the region bounded by the curves $y = x^2$, $y = 2x + 1$, $x = 0$ and $x = 1$.

ii) Find the volume of the solid obtained by rotating the above region around:

a- $y = 4$.

b- The y -axis.

c- The x -axis.