

1. Find the area under the curve $y = \cos^3 x$ between $x = 0$ and $x = \pi/2$

2. Evaluate $\int_3^4 x\sqrt{x-3} dx$

3. Find the value of $\int_e^{e^3} \frac{1}{x \ln x} dx$

4. Find the area of the finite region enclosed by the curves with equations $y = x(4 - x)$ and $y = x(x - 2)$.

5. Find

$$I = \int_0^v \frac{mv}{(1 - v^2/c^2)^{\frac{3}{2}}} dv$$