NCEA Level 3 Calculus (Integration) 21. Integration by Parts (Homework)

Reading

Go and watch...

https://www.youtube.com/watch?v=-reFBJ4R9iA

Questions

- 1. Compute the following indefinite integrals.
 - (a) $\int x \cos 5x \, dx$
 - (b) $\int \cos x \ln \sin x \, dx$
 - (c) $\int \cos \sqrt{x}$
- 2. Evaluate:

(a)
$$\int_{\sqrt{\pi/2}}^{\sqrt{\pi}} \theta^3 \cos(\theta^2) \, \mathrm{d}\theta$$

(b)
$$\int_{0}^{1} (x^2 + 1)e^{-x} \, \mathrm{d}x$$

- 3. (a) Prove that $\int (\ln x)^n dx = x(\ln x)^n \int (\ln x)^{(n-1)} dx$.
 - (b) Find $\int (\ln x)^3 dx$.