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) $\int x \cos 5x \, \mathrm{d}x$
   (b) $\int \cos x \ln \sin x \, \mathrm{d}x$
   (c) $\int \cos \sqrt{x} \, \mathrm{d}x$
2. Evaluate:
   (a) $\displaystyle\int_{\sqrt{\pi/2}}^{\sqrt{\pi}} \theta^3 \cos(\theta^2) \, \mathrm{d}\theta$
   (b) $\displaystyle\int_0^1 (x^2+1)e^{-x} \, \mathrm{d}x$
3. (a) Prove that $\int (\ln x)^n \, \mathrm{d}x = x(\ln x)^n - \int (\ln x)^{(n-1)} \, \mathrm{d}x$.
   (b) Find $\int (\ln x)^3 \, \mathrm{d}x$.