

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) $\int \cos \sqrt{x} \, dx$

2. Evaluate:

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

(b) $\int_0^1 (x^2 + 1)e^{-x} \, dx$

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

(b) Find $\int (\ln x)^3 \, dx$.