

Worksheet: Integration by Parts

This worksheet has questions on integration using the formula for integration by parts. Before attempting the questions below, you could read the study guide: [Integration by Parts](#).

Integration by Parts study guide



Model Answers to this sheet



1. Look at the integrals below. For which integrals would you use integration by parts and for those can you find out what is u and what is dv/dx ?

- | | | |
|--|---|--------------------------------------|
| a. $\int x \sin(x) dx$ | b. $\int_{\pi}^{2\pi} \frac{1}{2} \cos(x) dx$ | c. $\int -\frac{x}{2} \cos(2x) dx$ |
| d. $\int x e^{-x} dx$ | e. $\int x \ln(x) dx$ | f. $\int_1^2 \frac{x}{3} \sin(x) dx$ |
| g. $\int_{\pi}^{2\pi} \frac{1}{-2} \cos(x) dx$ | h. $\int_1^5 x e^x dx$ | i. $\int_e^{2e} \ln(3x) dx$ |
| j. $\int -\frac{1}{4} x^3 dx$ | k. $\int \frac{1}{2} \sin\left(\frac{x}{2}\right) dx$ | l. $\int_0^{\pi} x^2 \cos(x) dx$ |
| m. $\int e^{3x} \sin(x) dx$ | n. $\int x^0 \cos(4x) dx$ | o. $\int x^2 \ln(4x) dx$ |

2. Check your answers in the first question using the link above and integrate by parts the appropriate integrals.



This worksheet is one of a series on mathematics produced by the Learning Enhancement Team with funding from the UEA Alumni Fund. Scan the QR-code with a smartphone app for [more resources](#).

