

Worksheet: Integrating $y = ax^n$

This worksheet has questions about integration using the power rule which allows you to integrate functions form $y = ax^n$.

Model solutions to
this sheet



Integrating using the
Power Rule study guide



1. Do the following integrations:

- a) $\int 4x^3 dx$ b) $\int 6x^2 dx$ c) $\int \frac{x^2}{6} dx$ d) $\int 4x dx$
- e) $\int 5x^4 - 3x dx$ f) $\int 4 dx$ g) $\int 0.7 dx$ h) $\int 2\pi dx$
- i) $\int \frac{3}{x^4} dx$ j) $\int \frac{2}{x^3} dx$ k) $\int \frac{1}{x^2} dx$ l) $\int \frac{1}{x} dx$

2. Now differentiate all your answers to question 1. What do you notice?

3. Integrate the following equations to find y in terms of x and a constant:

- a) $\frac{dy}{dx} = 4x^3$ b) $\frac{dy}{dx} = 4$ c) $\frac{dy}{dx} = \frac{x}{3}$ d) $\frac{dy}{dx} = \frac{4}{3x}$

4. Do the following integrations:

- a) $\int 4\lambda^3 d\lambda$ b) $\int 3\sqrt{A} dA$ c) $\int \frac{5}{\sqrt{A}} dA$ d) $\int \frac{2}{3s^2} ds$
- e) $\int \frac{5-x^2}{x} dx$ f) $\int (v-3)^2 dv$ g) $\int \frac{x^3-3}{2} + \frac{3-x^3}{2} dx$



This worksheet is one of a series on
mathematics produced by the
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