Integration and Area Homework

Literacy

Integrate, Indefinite, Definite, integral, integrand, Limits, bound, area

Research

Research some of the practical uses of integration. Do not just list what Wikipedia has as uses of integration

Memory

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C$$

Skills

1. **Find the area bound by the curve and the x axis.**
   a) $y = x^2 + x + 4$ **between** $x = 1$ and $x = 3$
   b) $y = x$ **between** $x = 1$ and $x = 3$
   c) $y = x^2 + 3x$ **between** $x = 1$ and $x = 3$
2. **Find the area bound by the curve and the x axis. Ensure that you sketch the curve first**
   a) $y = x(x - 3)$ **between** $x = 0$ and $x = 5$
   b) $y = x^2 - 4$ **between** $x = -2$ and $x = 2$
3. **Calculate** $\int_0^6 4x - x^2\, dx$ **Explain what has happened.**
   a. **Explain what has happened.**
   b. **Sketch a curve and find the area bound by the curve and the x axis.**

Stretch

A curve is defined by the equation $y = 2x^3 - 3x^2 - 5x$

a) Find the coordinates where this curve crosses the x axis
b) Find the coordinates of the turning points of this curve (2dp)
c) Identify if each turning point is a maximum or a minimum
d) Sketch the curve using answer a-c
e) Find the area enclosed by the x axis and the part of the curve which lies above the x axis.