



Ross High School: Mathematics Department

Higher Mathematics: Homework 19

1. Integrate, expressing all answers with positive powers:

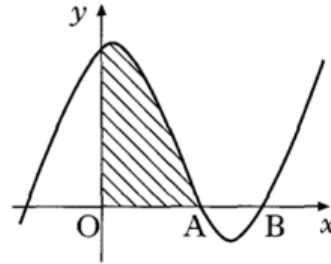
a) $\int_1^3 (x + 2)^3 dx$ b) $\int (x + 2)^3 dx$ c) $\int_{3\pi/4}^{5\pi/4} \cos 2x dx$ d) $\int (\sin 5t + \cos (-3t)) dt$ [7]

2. The diagram shows a sketch of the graph of $y = x^3 - 4x^2 + x + 6$.

a) Show that the graph cuts the x-axis at (3,0).

b) Hence or otherwise find the coordinates of A.

c) Find the shaded area.



[9]

3. Solve the equation: $5 \cos(4x - 20) + 3 = 7.25$ $0 \leq x \leq 180$ [4]

4. Determine the range of values of m for which, $(2m + 3)x^2 + (m + 3)x + 1 = 0$
has no real roots. [5]