

Mathematics.

HOMEWORK FOR LEVEL 5

1.

On the same graph, sketch the curves of functions

$$y = x^2 - 5x + 4 \text{ and } y = -2x^2 + 5x + 1.$$

Hence, find the area of the region enclosed
between the two curves.

(15 marks)

2.

Find the area in the first quadrant bounded by $f(x) = 4x - x^2$ and the x-axis.

Graph:

3. Find the area of the region enclosed by the following curves: $x = y + 2$, and $x = y^2$. Since the first function is better defined as a function of y , we will calculate the integral with respect to y .

4.

Express $\frac{x^2 + 1}{x^3 + 4x^2 + 3x}$ in partial fractions **(2.5 marks)**

and hence $\int \frac{x^2 + 1}{x^3 + 4x^2 + 3x} dx$ **(2.5 marks)**

5.

Find equations of the tangent and normal lines to the

curve of the function $y = f(x) = x^3 - 2x^2 + 4$ at point

$(2, 4)$.

(3 marks)

6.

Express y in terms of x given that:

$$5\log_2 y - 3\log_2(x + 4) = 2\log_2 y + 3\log_2 x$$

(3 marks)

END!!