4 A curve C has equation,

$$y = x^3 + 6x^2 + 11x + 6$$

4(a) In the space below, sketch a detailed graph of C, including the exact coordinates of any points of intersection or turning points.

You must show your working when finding any intercepts with the axes.

[9 marks]

4(b) Hence, or otherwise, find which of the following is the largest:

$$A = \int_{-4}^{-3} x^3 + 6x^2 + 11x + 6 \, \mathrm{d}x$$

$$B = \int_{-3}^{-2} x^3 + 6x^2 + 11x + 6 \, \mathrm{d}x$$

$$C = \int_{-2}^{-1} x^3 + 6x^2 + 11x + 6 \, \mathrm{d}x$$

$$D = \int_{-1}^{0} x^3 + 6x^2 + 11x + 6 \, \mathrm{d}x$$

[5 marks]