

## 'UK Carbon Dioxide Emissions'

a) Using the trapezium rule:

$$\int_{1990}^{2015} y dx \approx \frac{2015 - 1990}{5} [595.7 + 2(557.5 + 555.7 + 555.2 + 496.7) + 403.8]$$

$$\int_{1990}^{2015} y dx \approx 5 \times 5329.7$$

$$\int_{1990}^{2015} y dx \approx 26648.5$$

therefore total CO<sub>2</sub> emissions =  $2.66 \times 10^{13}$  kg

[3 marks]

b) The value is an underestimate as the estimate area is less than the true area for concave curve

[1 mark]