Marks

Question 2 (12 marks) Use a SEPARATE writing booklet.

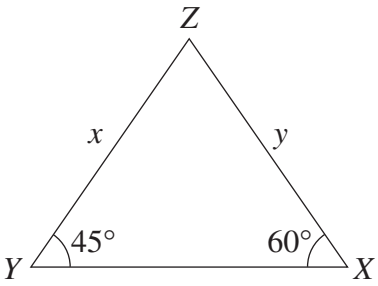
(a) Find the equation of the tangent to $y = e^{2x}$ at the point (0, 1). **2**

(b) Differentiate:

(i) $x \sin x$ **2**

(ii) $\dfrac{1\text{n}\, x}{x^2}$. **2**

(c) **3**



NOT TO SCALE

In the diagram, XYZ is a triangle where $\angle ZYX = 45°$ and $\angle ZXY = 60°$.

Find the exact value for the ratio $\dfrac{x}{y}$.

(d) Find:

(i) $\displaystyle\int \cos 3x\, dx$ **1**

(ii) $\displaystyle\int_0^1 \left(e^{5x} - 1\right) dx$. **2**