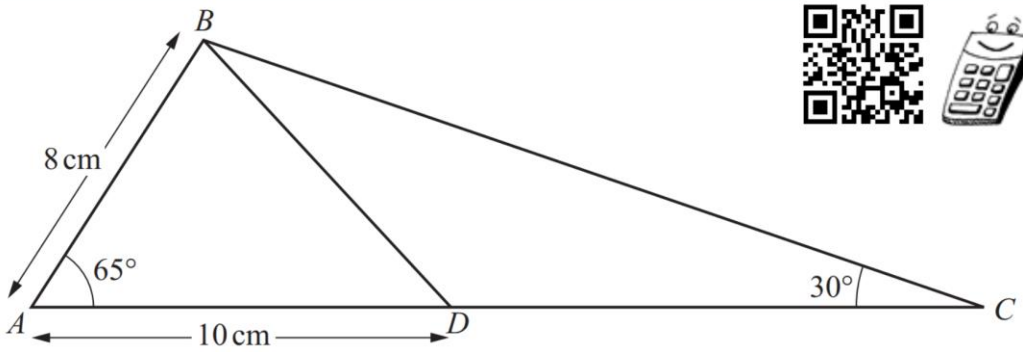
1



The diagram shows triangle ABC, with $AB = 8$ cm, angle $BAC = 65°$ and angle $BCA = 30°$. The point D is on AC such that $AD = 10$ cm.

(i) Find the area of triangle ABD. **[2]**

(ii) Find the length of BD. **[2]**

(iii) Find the length of BC. **[2]**

4 **(i)** Show that the equation

$$\sin x - \cos x = \frac{6\cos x}{\tan x}$$

can be expressed in the form

$$\tan^2 x - \tan x - 6 = 0.$$ **[2]**

(ii) Hence solve the equation $\sin x - \cos x = \frac{6\cos x}{\tan x}$ for $0° \leqslant x \leqslant 360°$. **[4]**

5 Solve the equation $2^{4x-1} = 3^{5-2x}$, giving your answer in the form $x = \frac{\log_{10} a}{\log_{10} b}$. **[6]**