9. (a) Show that

$$\frac{\sin x}{1 - \cos x} + \frac{1 - \cos x}{\sin x} \equiv k \operatorname{cosec} x \qquad x \neq n\pi, \quad n \in \mathbb{Z}$$

where k is a constant to be found.

(4)

(b) Hence explain why the equation

$$\frac{\sin x}{1 - \cos x} + \frac{1 - \cos x}{\sin x} = 1.6$$

has no real solutions.

(1)