

2.

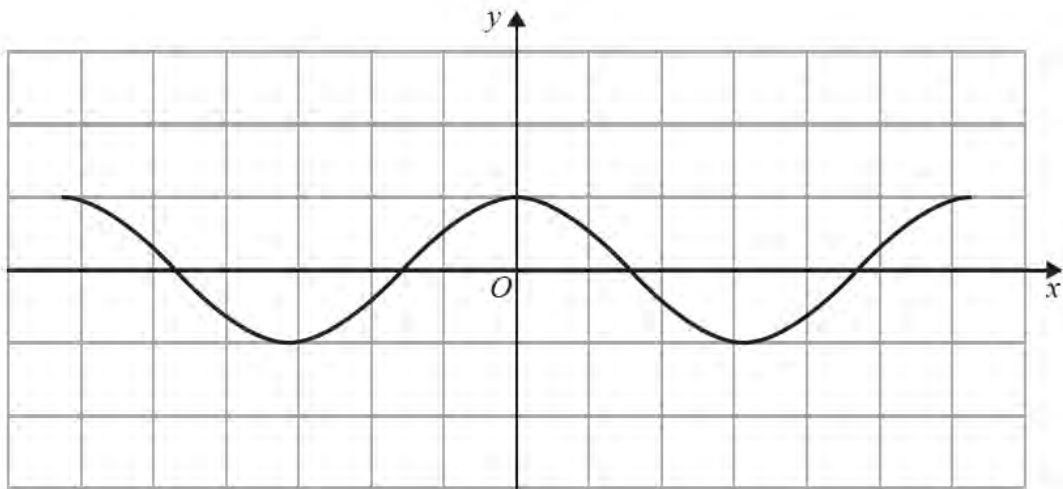


Figure 1

(a) Copy and use Figure 1 to show why the equation

$$2 \cos 4x - 10x - 1 = 0$$

only has one root.

(b) The root to this equation,  $\alpha$ , is very small. Using this as justification for using the small angle approximation for  $\cos x$ , find  $\alpha$  to 3 decimal places.

Give explanations for any rejected solutions.

(Total for Question 2 is 5 marks)