

1. March/2022/Paper_9709/22/No.4

(a) Show that $\sin 2\theta \cot \theta - \cos 2\theta \equiv 1$.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(b) Hence find the exact value of $\sin \frac{1}{6}\pi \cot \frac{1}{12}\pi$.

[2]

.....

.....

.....

.....

.....

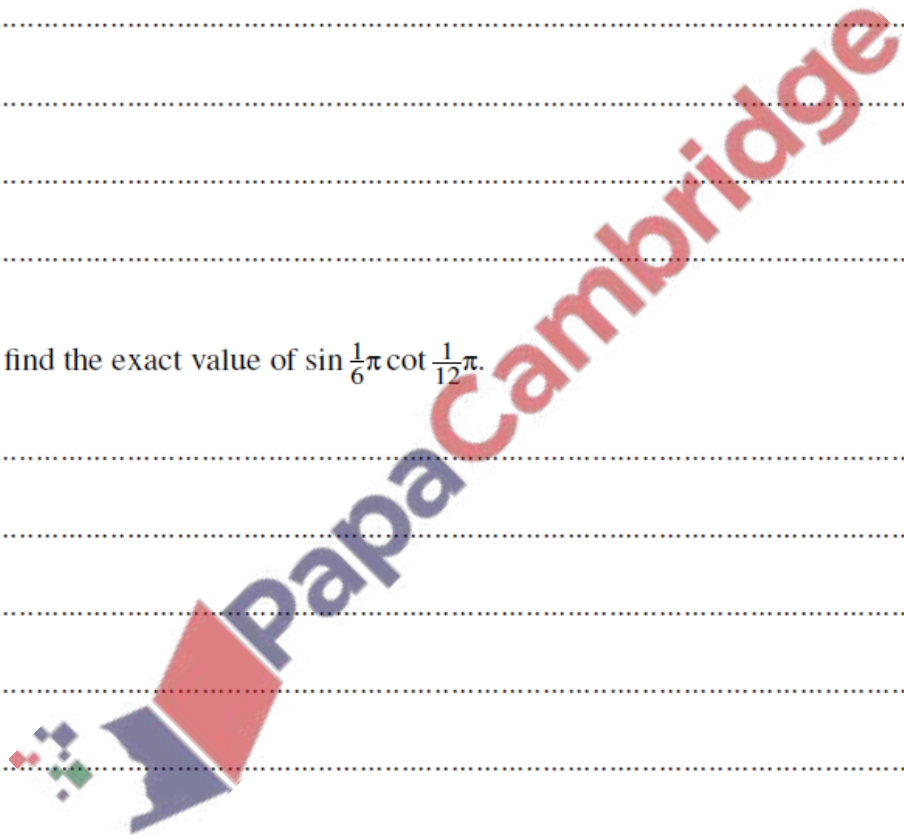
.....

.....

.....

.....

.....



(c) Find the smallest positive value of θ (in radians) satisfying the equation

$$\sin 2\theta \cot \theta - 3 \cos 2\theta = 1.$$

[2]

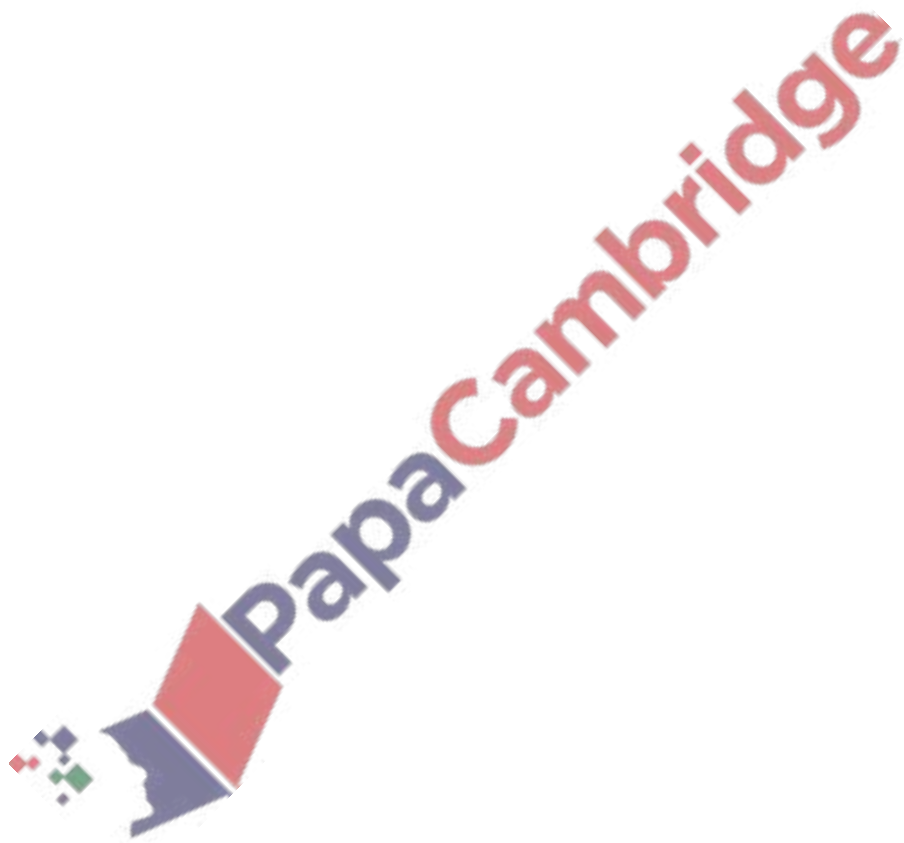
.....

.....

.....

.....

.....



(a) Express the equation $7 \tan \theta + 4 \cot \theta - 13 \sec \theta = 0$ in terms of $\sin \theta$ only.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(b) Hence solve the equation $7 \tan \theta + 4 \cot \theta - 13 \sec \theta = 0$ for $0^\circ < \theta < 360^\circ$.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(b) Hence solve the equation $3 \sin 4\beta \sec 2\beta + 10 \cos(2\beta - 30^\circ) = 2$ for $0^\circ < \beta < 90^\circ$.

[3]

