Question (0)

Use the properties of sine and cosine to express the following in terms of $\tan x$.

(a) $\tan(\pi - x)$

(b) $\tan\left(x + \frac{\pi}{2}\right)$

(c) $\tan(x + \pi)$

(d) $\tan(x + 3\pi)$

Question (1)

Given that $\cos\frac{\pi}{5} = 0.809$ find the value of:

(a) $\cos\frac{4\pi}{5}$

(b) $\cos\frac{21\pi}{5}$

(c) $\cos\frac{9\pi}{5}$

(d) $\cos\frac{6\pi}{5}$

EXAM HINT

You should always use radians unless explicitly told to use degrees.

Question (2)

Given that $\sin 130° = 0.766$ find the value of:

(a) $\sin 490°$

(b) $\sin 50°$

(c) $\sin(-130°)$

(d) $\sin 230°$

Question (3)

Use your calculator to evaluate the following, giving your answers to 3 significant figures.

(a) (i) $\sin 42°$ (ii) $\cos 168°$

(b) (i) $\sin(-50°)$ (ii) $\cos(-227°)$ *[4 marks]*

EXAM HINT

You can find the values of sine and cosine functions using your calculator. Make sure your calculator in radian mode.

Question (4)

(a) On the unit circle, mark the points representing $\frac{\pi}{6}, \frac{\pi}{3}$ and $\frac{2\pi}{3}$.

(b) Given that $\sin\frac{\pi}{6} = 0.5$, find the value of:

(i) $\cos\frac{\pi}{3}$ (ii) $\cos\frac{2\pi}{3}$

Question (5)

Evaluate $\cos(\pi + x) + \cos(\pi - x)$.

Question (6)

Simplify the following expression:

$$\sin x + \sin\left(x + \frac{\pi}{2}\right) + \sin(x + \pi) + \sin\left(x + \frac{3\pi}{2}\right) + \sin(x + 2\pi)$$

[5 marks]

Answers

Q(0):

(a) $-\tan x$ (b) $-\dfrac{1}{\tan x}$

(c) $\tan x$ (d) $\tan x$

Q(1):

(a) -0.809 (b) 0.809

(c) 0.809 (d) -0.809

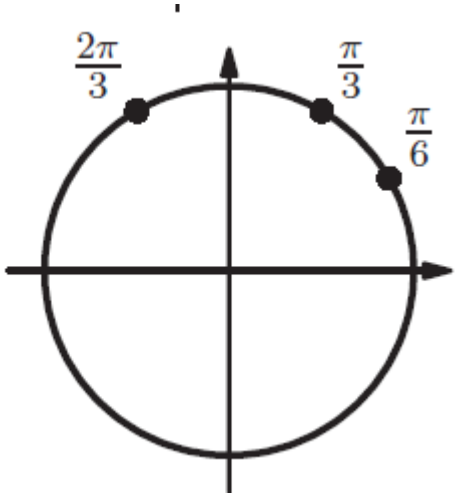
Q(2):

(a) 0.766 (b) 0.766

(c) -0.766 (d) -0.766

Q(3):

(a)



(b) (i) 0.5 (ii) -0.5

Q(4):

(a) (i) 0.669 (ii) -0.978

(b) (i) -0.766 (ii) -0.682

Q(5): $-2\cos x$

Q(6): $\sin x$