6. What is the solution of the equation \(2\sin x - \sqrt{3} = 0\) where \(\frac{\pi}{2} \leq x \leq \pi\)?

A \(\frac{\pi}{6}\)
B \(\frac{2\pi}{3}\)
C \(\frac{3\pi}{4}\)
D \(\frac{5\pi}{6}\)

Ans B

3. (a) (i) Diagram 1 shows part of the graph of \(y = f(x)\), where \(f(x) = p\cos x\).

Write down the value of \(p\).

Diagram 1

(ii) Diagram 2 shows part of the graph of \(y = g(x)\), where \(g(x) = q\sin x\).

Write down the value of \(q\).

Diagram 2

Ans \(p = \sqrt{7}\), \(q = -3\)
4. The diagram shows part of the graph of a function whose equation is of the form \( y = a \sin(bx) + c \).

(a) Write down the values of \( a, b \) and \( c \).

(b) Determine the exact value of the \( x \)-coordinate of \( P \), the point where the graph intersects the \( x \)-axis as shown in the diagram.

![Graph of a function](image)

\( x = 60^\circ, 120^\circ \)

\( y \)

\( x \)

\( 0 \)

\( 3 \)

\( 1 \)

\( -1 \)

\( a = 2, \ b = 3, \ c = -1 \)

\( x_P = 50^\circ \)

Ans

3. Find all the values of \( x \) in the interval \( 0 \leq x \leq 2\pi \) for which \( \tan^2(x) = 3 \).

\[ x = \frac{\pi}{3} \text{ and } x = \frac{4\pi}{3} \]

\[ x = \frac{2\pi}{3} \text{ and } x = \frac{5\pi}{3} \]

Ans

2. The diagram shows a sketch of part of the graph of a trigonometric function whose equation is of the form \( y = a \sin(bx) + c \).

Determine the values of \( a, b \) and \( c \).

\[ y = a \sin(bx) + c \]

\( x \)

\( 0 \)

\( 3 \)

\( -3 \)

\( y \)

\[ a = 4, \ b = 2, \ c = 1 \]

Ans

4. (a) Write down the exact values of \( \sin \left( \frac{\pi}{3} \right) \) and \( \cos \left( \frac{\pi}{3} \right) \).

(b) If \( \tan x = 4 \sin \left( \frac{\pi}{3} \right) \cos \left( \frac{\pi}{3} \right) \), find the exact values of \( x \) for \( 0 \leq x \leq 2\pi \).

\[ \frac{\sqrt{3}}{2}, \ \frac{1}{2} \]

\[ \frac{\pi}{3}, \ \frac{4\pi}{3} \]

Ans
8. The diagram shows the graph of a cosine function from 0 to \( \pi \).

   (a) State the equation of the graph.
   (b) The line with equation \( y = -\sqrt{3} \) intersects this graph at points A and B. Find the coordinates of B.

   \[
   y = 2 \cos(2x)
   \]
   \[
   B \left( \frac{5\pi}{12}, -\sqrt{3} \right)
   \]

9. (a) Write \( \sin(x) - \cos(x) \) in the form \( k \sin(x - a) \) stating the values of \( k \) and \( a \) where \( k > 0 \) and \( 0 \leq a \leq 2\pi \).

   (b) Sketch the graph of \( y = \sin(x) - \cos(x) \) for \( 0 \leq x \leq 2\pi \), showing clearly the graph's maximum and minimum values and where it cuts the \( x \)-axis and the \( y \)-axis.

   \[
   (a) \sqrt{2} \sin(x - \frac{\pi}{4})
   \]

   \[
   (b) \]

3. The diagram shows part of the graph of \( y = 6 \sin 3x \) and the line with equation \( y = 4 \).

   Find the \( x \)-coordinates of A and B.

   \[
   6 \sin 3x = 4
   \]
   \[
   3x = 41.8, 138.2, (401.8)
   \]
   \[
   x = 13.9, 46.1, (133.6)
   \]
   \[
   x_A = 13.9, x_B = 46.1
   \]
8. Sketch the graph of $y = 2\sin(x - 30)^\circ$ for $0 \leq x < 360$. 

<table>
<thead>
<tr>
<th>Specimen 1</th>
<th>Ans</th>
</tr>
</thead>
</table>

![Graph of $y = 2\sin(x - 30)^\circ$ for $0 \leq x < 360$.](image)