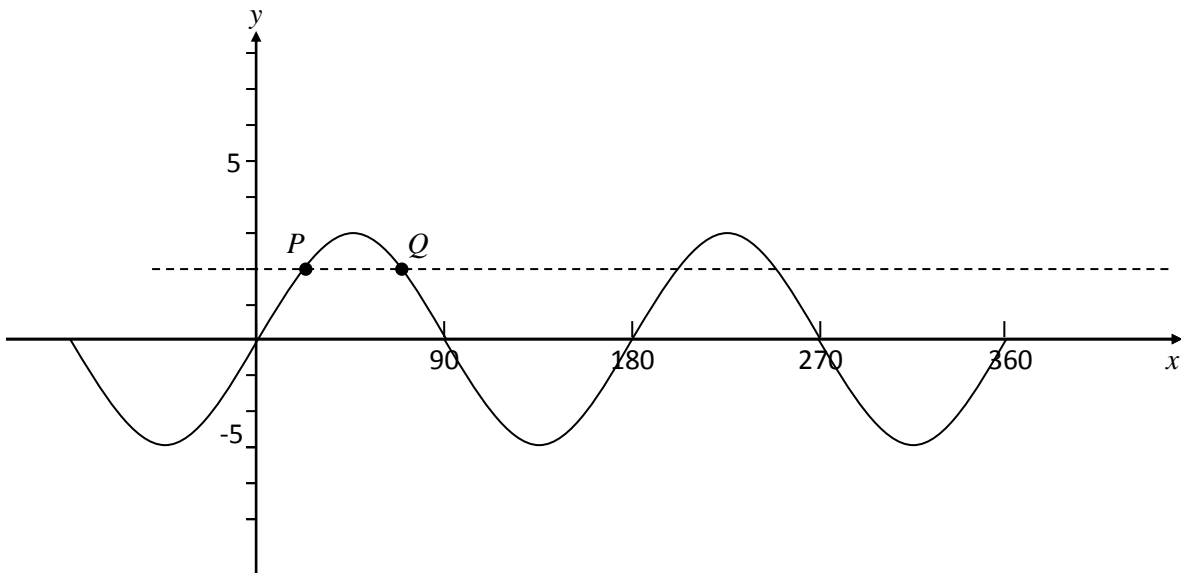


- Sketch the exact value triangles for the angles $30^\circ/60^\circ$ and 45° .
- Without a calculator, solve the following equations algebraically:

(a) $2\sin x^\circ + 4 = 5$, for $0 \leq x \leq 360$	(b) $3\tan x^\circ + 3 = 0$, for $0 \leq x \leq 360$
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- Solve the following equations algebraically:

(a) $5\cos x^\circ - 3 = 1$, for $0 \leq x \leq 360$	(b) $3\tan x^\circ + 1 = 0$, for $0 \leq x \leq 360$
(c) $3\sin x^\circ + 2 = 0$, for $0 \leq x \leq 360$	(d) $4\cos x^\circ - 3 = 0$, for $0 \leq x \leq 180$
- The diagram below shows part of the graph $y = a \sin bx^\circ$ and the line $y = 2$.



- State the values of a and b .
 - The line $y = 2$ cuts the graph at P and Q .
Find the x -coordinates of P and Q .
- The depth, D metres, of water in the Queens Dock at Invergordon is measured over a 6 hour period beginning at 6:00am. The depth is given by the formula:

$$D = 5.8 + 2.3\sin t^\circ, 0 \leq t \leq 360$$
 where t is the number of minutes after the recordings were started.
 - Find the depth of water at 8:00am.

The minimum depth of water to allow safe docking of a particular rig is 4.2 metres.

 - At which times, to the nearest minute, can the rig be safely docked?