Assignment 1 ICSE 2017

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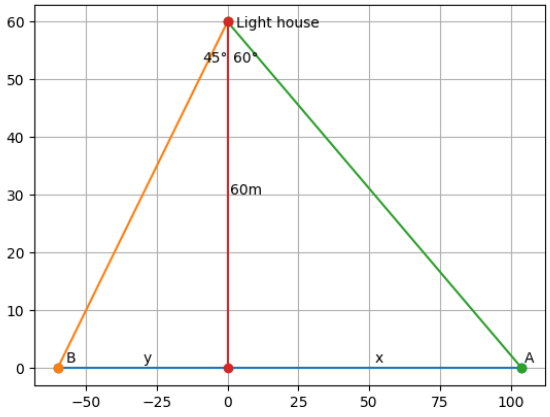
Q11 (a)

The angles of depression of two ships A and B as observed from the top of a light house 60 m high are 60° and 45° respectively. If the two ships are on the opposite sides of the light house, find the distance between the two ships. Give your answer correct to the nearest whole number.

Solution



h	θ_1	θ_2	x	y	answer
60m	60°	45°	?	?	?

The distance of ship A from light house (x) is given by $h \times \tan(\theta_1)$

The distance of ship B from light house (y) is given by $h \times \tan(\theta_2)$

Since the two ships are on opposite sides of the light house the distance between them can be obtained by adding their distances to the light house

$\therefore$ Distance between ships A and B (answer) $= x + y = h \times \theta_1 + h \times \theta_2 = 60 \times \sqrt{3} + 60 \times 1 = 103.92 + 60 = 163.92$

$\therefore$ answer $= 164$