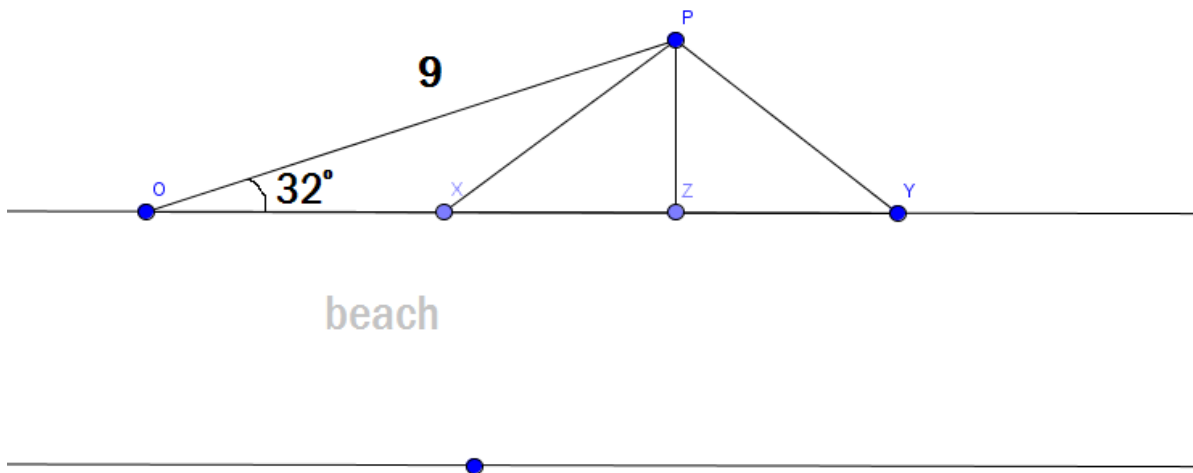


Answer on Question #77647 – Math – Trigonometry

Question

A road 9 miles long runs from a point P to a point O on a straight beach, making an angle of 32° with the beach. Two other straight roads, each 6 miles long, lead from P to the beach. How far is it from O along the beach to the nearer of these?

Solution



Let X and Y be the ends of the two roads leading to the beach. $PX = PY = 6$. The question asks to find OX.

Let Z be the middle of XY. Then $OX = OZ - ZX$.

$$OZ = OP \cos \angle POZ = 9 \cos 32^\circ$$

$$PZ = OP \sin \angle POZ = 9 \sin 32^\circ, \quad PX = 6 \Rightarrow XZ^2 = PX^2 - PZ^2 = 36 - 81 \sin^2 32^\circ$$

$$\text{Then } OX = 9 \cos 32^\circ - \sqrt{36 - 81 \sin^2 32^\circ}.$$

Using calculator $OX = 3.992$ miles.

Answer: 3.992 miles.

Answer provided by <https://www.AssignmentExpert.com>